Commonwealth of Kentucky
Division for Air Quality

STATEMENT OF BASIS/SUMMARY

Title V, Operating
Permit: V-18-056 R1
TVA – Paradise Fossil Plant
Drakesboro, KY 42337
4/13/2021
Stacie Daniels, Reviewer

SOURCE ID:	21-177-00006
AGENCY INTEREST:	3239
ACTIVITY:	APE20200008

Table of Contents

SECTION 1 – SOURCE DESCRIPTION

SIC Code: 4911, Electric Service (Fossil Fuel Power Generation)

Single Source Det. ☐ Yes ☒ No If Yes, Affiliated Source AI:

Source-wide Limit ☐ Yes ☒ No If Yes, See Section 4, Table A

28 Source Category ☒ Yes ☐ No If Yes, Category: Fossil-fuel boilers, or combination of fossil-fuel boilers, totaling more than 250 million BTUs per hour heat input

County: Muhlenberg
Nonattainment Area ☒ N/A ☐ PM_{10} ☐ $PM_{2.5}$ ☐ CO ☒ NO_X ☐ SO_2 ☐ Ozone ☐ Lead

PTE* greater than 100 tpy for any criteria air pollutant ☒ Yes ☐ No
If yes, for what pollutant(s)?
☒ PM_{10} ☒ $PM_{2.5}$ ☒ CO ☒ NO_X ☐ SO_2 ☒ VOC

PTE* greater than 250 tpy for any criteria air pollutant ☒ Yes ☐ No
If yes, for what pollutant(s)?
☒ PM_{10} ☒ $PM_{2.5}$ ☒ CO ☒ NO_X ☐ SO_2 ☐ VOC

PTE* greater than 10 tpy for any single hazardous air pollutant (HAP) ☐ Yes ☒ No
If yes, list which pollutant(s):

PTE* greater than 25 tpy for combined HAP ☐ Yes ☒ No

*PTE does not include self-imposed emission limitations.

Description of Facility:
Paradise Fossil Plant (PAF) is located on the western bank of the Green River approximately 5 miles northeast of Drakesboro, Kentucky. The facility consists of three natural gas-fired simple cycle combustion turbines (EU 137-139) and three natural gas-fired combustion turbines that can operate in either simple-cycle (individual) (EU 123-125) or combined-cycle mode (in series with one-steam turbine) (EU 120-122). The combined cycle combustion turbines each have a maximum heat input capacity of 2,300 MMBtu/hr with a capacity of 235 MW of electricity and each have duct burners rated at 400 MMBtu/hr. The simple cycle combustion turbines have a maximum heat input capacity of 2,257 MMBtu/hr with 229 MW of generating capacity at 59°F. The facility also includes an 80 MMBtu/hr natural gas-fired auxiliary boiler, three 13.5 MMBtu/hr natural gas-fired heaters, three 10 MMBtu/hr natural gas-fired heaters, a multiple-cell cooling tower, and three emergency engines. In 2018, TVA installed a dry fly ash handling system, a gypsum dewatering facility, and a new coal combustion residual landfill.

SECTION 2 – CURRENT APPLICATION

Permit Number: V-18-056 R1 Activities: APE20200008

Received: December 10, 2020 Application Complete Date(s): January 26, 2021

Permit Action: ☐ Initial ☐ Renewal ☒ Significant Rev ☐ Minor Rev ☐ Administrative

Construction/Modification Requested? ☒Yes ☐No NSR Applicable? ☒Yes ☐No

Previous 502(b)(10) or Off-Permit Changes incorporated with this permit action ☐Yes ☒No

Description of Action:

Emission Units Removed	Description
3	Unit 3 Coal Fired Boiler (PAF3)
19, 55-58, 71-73, 77, 85	Fugitive Emissions
20, 21, 37, 38	Coal Breakers & Handling
22, 23, 25, 26, 35	Coal Handling & Washing Plant
32-34	Coal Conveying & Bunker Room
74-76	Limestone Handling
79-84	Coal Fines Recovery Process
86-93	Lime Handling & Storage
102-103	Intake Fire Pumps
126	Mobile Coal Washing Station
111-113	Three Dual Fuel-Fired Auxiliary Boilers for PAF3
131, 132,	Fly Ash Silos A & B;
133A, 134A, 134B, 134C, 134F	Dewatered Gypsum Handling
16-18	Cooling Towers

Insignificant Activities Removed	Description
1-12	PAF3 Powerhouse
13-14	Precipitator Area
15	Scrubber Area
16-25	Coal Handling Process
26-31	CyClean Handling Emissions
32, 37-40	Miscellaneous Sources

- Addition of EUs 137-139: three 2,257 MMBtu/hr simple cycle combustion turbines equipped with dry low-nitrogen oxide combustors and inlet evaporative cooling systems. They each have gross electrical generating capacities of 229 MW at 59°F. They are regulated by 401 KAR 51:160, 401 KAR 51:210, 401 KAR 51:220, 401 KAR 51:230, 401 KAR 51, 240, 401 KAR 51:250, 401 KAR 51:260, 401 KAR 52:060, 401 KAR 59:010, 40 CFR 60, Subpart KKKK, 40 CFR 60, Subpart TTTT, 40 CFR 75, and 401 KAR 63:020.
- Addition of EUs 141-143: three 10 MMBtu/hr dew point gas heaters with oxygen-trim systems, regulated by 401 KAR 59:015 and 40 CFR 60, Subpart Dc.
- A netting analysis was conducted for the addition of the Paradise Combined Cycle Plant (PCC) and the Simple Cycle Project (PCT) (current application) with the removal of the

coal-fired boiler and operations (PAF03). The most recent contemporaneous five-year period (2015 to 2019) was utilized, resulting in a net decrease of emissions, less than PSD Significant Emission Rates. Therefore, PSD does not apply. However, each unit is limited to electricity generation of 766,000 MWh(gross)/year to preclude PSD.

Pollutant	Addition of PCT	Addition of PCC*	Retirement of PAF03	Net Change in Emissions
CO	307	58.2	506	-141
NOx	627	695	3,988	-2,666
SO_2	6.8	12.8	2,829	-2,809
PM	46.4	81	409	-282
PM_{10}	160	162	814	-492
$PM_{2.5}$	128	162	683	-393
VOC	36.6	45.6	111	-29
Lead (Pb)	< 0.01	0.01	0.10	-0.09
SO_3 as H_2SO_4	0.5	7.1	441	-433
CO_2e	1,367,414	2,541,000	4,827,711	-919,297

*PCC actual baseline emissions included in netting analysis, as operations commenced during the contemporaneous five-year period (2015-2019).

- The facility is no longer considered a major source for HAPs. As a result:
  - For EUs 107-110, 40 CFR 63, Subpart DDDDD is no longer applicable
  - For EUs 120-125, 40 CFR 63, Subpart YYYY is no longer applicable.
- 40 CFR 60, Subpart Db is no longer applicable due to the removal of EU 111-113.

V-18-056 R1 Emission Summary				
Pollutant	2019 Actual (tpy)	Previous PTE V-18-001 R1 (tpy)	Change (tpy)	Revised PTE V-18-056 R1 (tpy)
CO	370.8	3,257.3	-2,869.4	467.1
NO_X	4412.6	15,295.4	-14,499.2	805.4
PT	391.8	2,107.4	-1,813.3	294.4
PM_{10}	253.2	3,856.0	-3,390.2	519.8
$PM_{2.5}$	193.7	2,822.7	-2,427.7	410.9
SO_2	2130.3	10,099.4	-10,026.5	72.8
VOC	90.8	380.1	-280.1	106.2
Lead	0.04	0.68	0.65	0.03
Greenhouse Gases (GHGs)				
Carbon Dioxide	5,748,546	5,567,059	-1,582,601	3,984,461
Methane	80	1306	-1,232	74
Nitrous Oxide	55	186	-179	7
CO_2 Equivalent (CO_2e)	5,766,936	5,655,246	-1,667,710	3,988,540
Hazardous Air Pollutants (HAPs)				
Acetaldehyde	n/a	1.46	0.31	1.77
Benzene	n/a	11.05	-10.52	0.53
Ethylbenzene	0.70	1.05	0.37	1.42
Formaldehyde	2.98	5.21	1.79	7.00
Hydrochloric Acid	11.76	546.03	-546.03	0.00
Hydrofluoric Acid	3.37	28.58	-28.58	0.00
Propylene Oxide	n/a	0.54	0.33	0.87
Toluene	n/a	2.53	1.37	3.90
Xylenes (Total)	1.41	1.20	0.72	1.92
Combined HAPs:	20.42	493.29	-474.89	18.48
Other Toxic Pollutants				
Ammonia	n/a	125.10	0.00	125.10
Sulfuric Acid Mist	247.73	1,868.02	-1,816.03	51.99

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS

Emission Unit 120 - 122 Combined Cycle (3) – HRSG(3)/CT(3)/Duct Burner(3)				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
SO_2	0.06 lb/MMBtu & 34,680 ton/yr	40 CFR 60.4330(a)(2) & Preclude 401 KAR 51:017	2.86E-3 lb/MMscf, engineering estimate based on fuel analysis	Gas Analysis Sulfur Content is below the emission standard & Monitor fuel usage continuously, on a 12-month rolling total
NO_x	0.43 lb/MWh & 6,027 tons/yr	40 CFR 60.4320(a) & Preclude 401 KAR 51:017	Vendor guarantees meet these limits	NO_x CEMS
CO_2	1,000 lb/MWh & 9,792,740 ton/yr	40 CFR 60, Subpart TTTT, Table 2, Item 1 & Preclude 401 KAR 51:017	117.06 lb/MMBtu, 40 CFR 98, Subpart C, Table C-1	CO_2 CEMS
PM PM_{10} $PM_{2.5}$	3,247 ton/yr 2,206 ton/yr 1,169 ton/yr	Preclude 401 KAR 51:017, Prevention of Significant Deterioration, based on a 12-month rolling total.	0.011 lb/MMBtu, Vendor guarantee	Monitor fuel usage continuously, on a 12-month rolling total
CO	1,070 ton/yr		$5.58x10^{-3}$ lb/MMBtu, Vendor guarantee	Monitor fuel usage continuously, on a 12-month rolling total
VOC	253 ton/yr		$2.62x10^{-3}$ lb/MMBtu, Vendor guarantee	Monitor fuel usage continuously, on a 12-month rolling total
SO_3	4,135 ton/yr		Assume conversion of 1% of SO_2	Monitor fuel usage continuously, on a 12-month rolling total
Lead (Pb)	1.5 ton/yr		4.0x10-7 lb/MMBtu, EPRI TR-105611, 11-95, Table 4-1	Monitor fuel usage continuously, on a 12-month rolling total

Initial Construction Date: 2015

Process Description:
Three identical natural-gas-fired combustion turbine (CT) electric generating units (General Electric Model 7FA.05 [GE 7FA]). The CTs are rated at 2,300 MMBtu/hr and have gross electrical generating capacities of 235 MW each. The one steam turbine has the electrical generating capacity of 470 MW. For nitrogen oxide (NO_x) control, the CTs are equipped with dry low-nitrogen oxide (DLN) combustors. An evaporative cooling system is installed at the compressor inlet of each CT. Evaporative cooling is achieved when filtered air passes through a saturated media and water evaporates off the wet media. This evaporation reduces the air temperature and increases the density of the combustion air. Excess water that does not evaporate is

Emission Unit 120 - 122 Combined Cycle (3) – HRSG(3)/CT(3)/Duct Burner(3)

directed downward so as not to be carried along with the cooled air. Cooled air passes through a mist eliminator where leftover water droplets are removed. Clean, cool air is then directed into the turbine inlet. The effect of this system allows for increased CT generation at ambient temperatures above 59°F. During combined cycle operations, a HRSG is provided to recover the waste heat from the CT exhaust and generate steam. Each CT has one HRSG. An oxidizing catalyst for carbon monoxide (CO) and volatile organic compound (VOC) emissions control and a selective catalytic-reduction (SCR) reactor for nitrogen oxide (NO_x) emissions control is installed in each HRSG. Each HRSG contains natural gas-fired duct burners (maximum heat input of 400 MMBtu/hr per HRSG) to augment steam production during combined-cycle (CC) operations. The HRSG SCR utilizes aqueous ammonia (NH_3) to achieve NO_x reduction across the SCR reactor's catalyst as needed to maintain compliance with the emission limit. The facility has two (2) aqueous NH_3 tanks, each with a capacity of 20,000 gallons. The tanks are designed to operate under atmospheric pressure and store 19.5 percent aqueous NH_3.

Applicable Regulation:
401 KAR 51:017, Prevention of Significant Deterioration of Air Quality;
401 KAR 51:160, NOx Requirements for Large Utility and Industrial Boilers;
401 KAR 51:210, CAIR, NOx annual trading program (see Section K of V-18-056);
401 KAR 51:220, CAIR, NOx ozone season trading program (see Section K of V-18-056);
401 KAR 51:230, CAIR, SO_2 trading program (see Section K of V-18-056);
401 KAR 52:060, Acid Rain Permits, incorporating 40 CFR Parts 72 to 78 (see Section J of V-18-056);
401 KAR 60:005, Section 2(2)(ffff), 40 CFR 60.4300 to 60.4420, Table 1 (Subpart KKKK), Standards of Performance for Stationary Combustion Turbines;
401 KAR 60:005, Section 2(2)(jjjj), 40 CFR 60.5508 to 60.5580, Tables 1 to 3 (Subpart TTTT), Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units, as published July 1, 2016;
40 CFR 75, Continuous Emission Monitoring

State Origin Requirement:
401 KAR 63:020, *Potentially hazardous matter or toxic substances*

Additional Requirement Specifically for HRSG:
401 KAR 59:015, New indirect heat exchangers

Non-Applicable Regulation:
401 KAR 63:002, Section 2(4)(dddd), 40 CFR 63.6080 through 63.6175, Table 1 to 7 (Subpart YYYY), National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines

Comments:
Emissions from combined-cycle operation without duct burners, and combined-cycle operation with duct burners are determined from manufacture's data for particulate, nitrogen oxides, carbon monoxide, and volatile organic compounds. The sulfur dioxide emission factor is based on a maximum 10,000 grains sulfur per million scf and 5% oxidation to sulfuric acid during fuel combustion. An additional 5% of the sulfur is oxidized in the SCR and 30% in the CO/VOC catalyst. Carbon dioxide equivalent emissions are determined from 40 CFR Part 98. Most hazardous air pollutant emission factors are from the Emission Factor Handbook, November 1995, or AP-42, Section 3.1, April 2000. Annual emissions for combined cycle operation are based on 4,130 hr/yr without duct burner operation and 4,130 hr/yr with duct burner operation. These annual hours per year for combined cycle operation are for estimating emissions and are not a limit.

Emission Unit 123-125 – Simple Cycle Mode (3)				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
SO_2	0.06 lb/MMBtu & 34,680 ton/yr	40 CFR 60.4330(a)(2) & Preclude 401 KAR 51:017	2.86E-3 lb/MMscf, engineering estimate based on fuel analysis	
NO_x	0.43 lb/MWh & 6,027 tons/yr	40 CFR 60.4320(a) & Preclude 401 KAR 51:017	Vendor guarantees meet these limits	
CO_2	1,000 lb/MWh & 9,792,740 ton/yr	40 CFR 60, Subpart TTTT, Table 2, Item 1 & Preclude 401 KAR 51:017		
PM PM_{10} $PM_{2.5}$	3,247 ton/yr 2,206 ton/yr 1,169 ton/yr	Preclude 401 KAR 51:017, Prevention of Significant Deterioration, based on a 12-month rolling total.	0.011 lb/MMBtu, Vendor guarantee	Monitor fuel usage continuously, on a 12-month rolling total
CO	1,070 ton/yr		$5.58x10^{-3}$ lb/MMBtu, Vendor guarantee	Monitor fuel usage continuously, on a 12-month rolling total
VOC	253 ton/yr		$2.62x10^{-3}$ lb/MMBtu, Vendor guarantee	Monitor fuel usage continuously, on a 12-month rolling total
SO_3	4,135 ton/yr		Assume conversion of 1% of SO_2	Monitor fuel usage continuously, on a 12-month rolling total
Lead (Pb)	1.5 ton/yr		4.0x10-7 lb/MMBtu, EPRI TR-105611, 11-95, Table 4-1	Monitor fuel usage continuously, on a 12-month rolling total

Initial Construction Date 8/1/2016

Process Description:
Three (3) identical natural-gas-fired combustion turbine (CT) electric generating units (General Electric Model 7FA.05 [GE 7FA]) have the capability to operate in either simple-cycle mode (i.e., HRSG is bypassed) or combined-cycle mode. The CTs are rated at 2,300 MMBtu/hr and have gross electrical generating capacities of 235 MW each. The one steam turbine has the electrical generating capacity of 470 MW. For nitrogen oxide (NO_x) control, the CTs are equipped with dry low-nitrogen oxide (DLN) combustors. An evaporative cooling system is installed at the compressor inlet of each CT. Evaporative cooling is achieved when filtered air passes through a saturated media and water evaporates off the wet media. This evaporation reduces the air temperature and increases the density of the combustion air. Excess water that does not evaporate is directed downward so as not to be carried along with the cooled air. Cooled air passes through a mist eliminator where leftover water droplets are removed. Clean, cool air is then

Emission Unit 123-125 – Simple Cycle Mode (3)

directed into the turbine inlet. The effect of this system allows for increased CT generation at ambient temperatures above 59°F. During combined cycle operations, a HRSG is provided to recover the waste heat from the CT exhaust and generate steam. Each CT has one HRSG. An oxidizing catalyst for carbon monoxide (CO) and volatile organic compound (VOC) emissions control and a selective catalytic-reduction (SCR) reactor for nitrogen oxide (NO_x) emissions control is installed in each HRSG. Each HRSG contains natural gas-fired duct burners (maximum heat input of 400 MMBtu/hr per HRSG) to augment steam production during combined-cycle (CC) operations. The HRSG SCR utilizes aqueous ammonia (NH_3) to achieve NO_x reduction across the SCR reactor's catalyst as needed to maintain compliance with the emission limit. The facility has two (2) aqueous NH_3 tanks, each with a capacity of 20,000 gallons. The tanks are designed to operate under atmospheric pressure and store 19.5 percent aqueous NH_3.

Applicable Regulations:
401 KAR 51:017, Prevention of Significant Deterioration of Air Quality;
401 KAR 51:160, NO_x Requirements for Large Utility and Industrial Boilers;
401 KAR 51:210, CAIR, NO_x annual trading program (see Section K of V-18-056);
401 KAR 51:220, CAIR, NO_x ozone season trading program (see Section K of V-18-056);
401 KAR 51:230, CAIR, SO_2 trading program (see Section K of V-18-056);
401 KAR 52:060, Acid Rain Permits, incorporating 40 CFR Parts 72 to 78 (see Section J of V-18-056);
401 KAR 60:005, Section 2(2)(ffff), 40 CFR 60.4300 to 60.4420, Table 1 (Subpart KKKK), Standards of Performance for Stationary Combustion Turbines;
401 KAR 60:005, Section 2(2)(jjjj), 40 CFR 60.5508 to 60.5580, Tables 1 to 3 (Subpart TTTT), Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units, as published July 1, 2016;
40 CFR 75, Continuous Emission Monitoring

State Origin Requirement:
401 KAR 63:020, *Potentially hazardous matter or toxic substances*

Non-Applicable Regulation:
401 KAR 63:002, Section 2(4)(dddd), 40 CFR 63.6080 through 63.6175, Table 1 to 7 (Subpart YYYY), National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines

Comments:
Emissions from combined-cycle operation without duct burners, and combined-cycle operation with duct burners are determined from manufacture's data for particulate, nitrogen oxides, carbon monoxide, and volatile organic compounds. The sulfur dioxide emission factor is based on a maximum 10,000 grains sulfur per million scf and 5% oxidation to sulfuric acid during fuel combustion. An additional 5% of the sulfur is oxidized in the SCR and 30% in the CO/VOC catalyst. Carbon dioxide equivalent emissions are determined from 40 CFR Part 98. Most hazardous air pollutant emission factors are from the Emission Factor Handbook, November 1995, or AP-42, Section 3.1, April 2000. Annual emissions for simple cycle operation are based on 500 hr/yr operation for each combustion turbine. The three combustion turbines are limited to 1,500 hr/yr total. Annual emissions for combined cycle operation are based on 4,130 hr/yr without duct burner operation and 4,130 hr/yr with duct burner operation. These annual hours per year for combined cycle operation are for estimating emissions and are not a limit.

Emission Unit 137-139 – Simple Cycle Combustion Turbines (3)				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
NO_x	15 ppm at 15% O_2 or 54 ng/J of useful output (0.43 lbs/MWh)	40 CFR 60.4320(a)	55.25 lbs/MMscf, based on 15 ppm at 15% O_2 limit given by 40 CFR 60, Subpart KKKK (See Comment 4)	Initial performance test & continued compliance demonstrated through CEMS monitoring and recordkeeping
SO_2	26 ng/J (0.060 lbs/MMBtu)	40 CFR 60.4330(a)(2)	0.57 lbs/MMscf, 40 CFR 75, Appendix D (See Comment 5)	Initial performance test & continued compliance from either a fuel quality certification or fuel sampling data
CO_2	50 kg/GJ (120 lbs/MMBtu)	40 CFR 60.5520(a) referencing Table 2, Item 2	53.38 lbs/MMscf, limit given by 40 CFR 60, Subpart TTTT (See Comment 6)	Compliance assumed based on manufacturer's guarantee and a maximum electric output of 766,000 MWh(Gross)/CT-year, based on a 12-operating-month rolling average

Initial Construction Date: Proposed May 2023

Process Description:
Three (3) identical simple cycle, natural-gas-fired combustion turbine (CT) electric generating units (General Electric Model 7FA.05 [GE 7FA]). The CTs are each rated at 2,257 MMBtu/hr and have gross electrical generating capacities of 229 MW each at 59°F. For nitrogen oxide (NO_x) control, the CTs are equipped with dry low-nitrogen oxide (DLN) combustors. An evaporative cooling system is installed at the compressor inlet of each CT. Evaporative cooling is achieved when filtered air passes through a saturated media and water evaporates off the wet media. This evaporation reduces the air temperature and increases the density of the combustion air. Excess water that does not evaporate is directed downward so as not to be carried along with the cooled air. Cooled air passes through a mist eliminator where leftover water droplets are removed. Clean, cool air is then directed into the turbine inlet. The effect of this system allows for increased CT generation at ambient temperatures above 59°F.

Applicable Regulations:
401 KAR 51:160, NO_x Requirements for Large Utility and Industrial Boilers
401 KAR 51:210, CAIR, NO_x annual trading program (see Section K of V-18-056 R1)
401 KAR 51:220, CAIR, NO_x ozone season trading program (see Section K of V-18-056 R1)
401 KAR 51:230, CAIR, SO_2 trading program (see Section K of V-18-056 R1)
401 KAR 51:240, CSAPR NO_x annual trading program (See Section L of V-18-056 R1)
401 KAR 51:250, CSAPR NO_x ozone season group 2 trading program (See Section L of V-18-056 R1)
401 KAR 52:060, Acid Rain Permits, incorporating 40 CFR Parts 72 to 78 (see Section J of V-18-056)
401 KAR 60:005, Section 2(2)(ffff), 40 CFR 60.4300 to 60.4420, Table 1 (Subpart KKKK), Standards of Performance for Stationary Combustion Turbines

Emission Unit 137-139 – Simple Cycle Combustion Turbines (3)

401 KAR 60:005, Section 2(2)(jjjj), 40 CFR 60.5508 to 60.5580, Tables 1 to 3 (Subpart TTTT), Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units, as published July 1, 2016
40 CFR 75, Continuous Emission Monitoring

State Origin Requirement:
401 KAR 63:020, Potentially hazardous matter or toxic substances

Comments:

1. Since electric generation from CTs vary with ambient conditions, operations are restricted by the federally enforceable 40 CFR 60, Subpart TTTT-derived generation limit of 766,000 MWh(Gross)/CT-year rather than by a maximum number of operating hours. The limit is calculated by multiplying the potential electric output (PEO) by the baseload design rate efficiency. The PEO is calculated by multiplying the baseload design rate efficiency at maximum electric production by the baseload rating. (APE20200008 Application, Equations 19-21)
2. The facility approximates a maximum of 150 startups/shutdowns per year, with each startup and shutdown lasting approximately 20 minutes (0.333 hrs) and 14 minutes (0.233 hrs), respectively. Startups result in 21.8 MWh and shutdowns accrue 7.4 MWh. The annual number of hours used in emission calculations are calculated as follows:

$$(0.333 + 0.233)\frac{hours}{event} \times 150\frac{events}{CT-yr} = 85\frac{hours}{CT-yr}$$

$$(21.8 + 7.4)\frac{MWh}{event} \times 150\frac{events}{CT-yr} = 4{,}380\frac{MWh}{CT-yr}$$

$$(766{,}000 - 4{,}380)\frac{MWh}{CT-yr} \div 229.305\ MW = 3{,}321\frac{hours}{CT-yr}$$

$$(3{,}321 + 85)\frac{hours}{CT-yr} = 3{,}405\frac{hours}{CT-yr}$$

3. GE guarantees filterable plus condensable steady-state particulate emissions (PM_{10}) of 18 lbs/CT-hour. Startup (SU) and shutdown (SD) PM_{10} emissions are each 31.3 lbs/CT-hour. The following equation can be used to determine the PM_{10} emission factor for each CT:

$$\left(\frac{18\frac{lbs}{baseload\ hour} \times \frac{3{,}321\frac{baseload\ hours}{yr}}{3{,}405\frac{total\ hours}{yr}} + 31.3\frac{lbs}{(SU+SD)\ hour} \times \frac{85\frac{(SU+SD)\ hours}{yr}}{3{,}405\frac{total\ hours}{yr}}}{\frac{2{,}293\frac{MMBtu}{hr}}{1020\frac{MMBtu}{MMscf}}}\right) = 8.29\frac{lbs}{MMscf}$$

   Where 2,293 MMBtu/hr is the HHV of each CT at 0°F.
4. 40 CFR 60, Subpart KKKK provides a NO_x emission standard of 15 ppm @ 15% O_2 that TVA relies upon to account for maximum NO_x emissions from the CTs. The Division reviewed the alternative limit of 96 ppm at 15% O_2 and verified that the facility would still fall under the significant emission rate increase while operating at or below 50% of peak load. The 15 ppm NO_x emission standard can be converted to lbs/yr using the following equation:

$$\frac{15ft^3NO_2}{10^6ft^3FG} \times \frac{1\ lbmol\ NO_2}{385.3ft^3NO_2} \times \frac{46.01\ lbsNO_2}{lbmol\ NO_2} \times \frac{5.33 \times 10^7 dscf\ FG}{hour} \times \frac{20.9 - 13.17}{20.9 - 15} \times \frac{3{,}321\ hours}{yr} = 415{,}401\frac{lbs\ NO_2}{yr}$$

   Where 385.3 scf/lbmol is the molar volume at standard conditions (68°F & 1atm), 46.01 lbs/lbmol is the molar mass of NO_2, 5.33×10^7 dry scf FG/hr is the exhaust flow at 0°F and 13.17% dry O_2. Air is approximately 20.9% O_2 by volume.

Emission Unit 137-139 – Simple Cycle Combustion Turbines (3)

SU & SD NO_x emissions are 87.2 lbs/hr and 90.0 lbs/hr, respectively, and these emissions are calculated as follows:

$$87.2\frac{lbs}{hr} \times 0.333\frac{hours}{event} \times 150\ \frac{events}{yr} + 90.0\frac{lbs}{hr} \times 0.233\frac{hours}{event} \times 150\frac{events}{yr} = 7{,}501\frac{lbs\ NO_x}{yr}$$

The emission factor for NO_x can be calculated by adding together the baseload, SU & SD emissions, dividing by the total number of hours per CT-yr, and dividing by the hourly design rate as follows:

$$\frac{415{,}401\frac{lbs\ NO_x}{yr} + 7{,}501\frac{lbs\ NO_x}{yr}}{3{,}405\frac{hours}{yr} * \frac{2{,}293\frac{MMBtu}{hr}}{1020\frac{MMBtu}{MMscf}}} = 55.25\frac{lbs}{MMscf}$$

5. 40 CFR 75, Appendix D provides an SO_2 emission factor of 0.0006 lbs/MMBtu. SU and SD SO_2 emissions result in 0.497 lbs/hr and 0.317 lbs/hr, respectively. The following equation is used to calculate a total emission factor of 0.57 lbs/MMscf:

$$\frac{0.0006\frac{lbs}{MMBtu} \times 2{,}293\frac{MMBtu}{hr} \times 3{,}321\frac{hrs}{yr} + \left(0.497\frac{lbs}{hr} \times 0.333\frac{hrs}{SU} + 0.317\frac{lbs}{hr} \times 0.233\frac{hrs}{SD}\right) \times 150\frac{SU\&SD}{yr}}{3{,}405\frac{hours}{yr} * \frac{2{,}293\frac{MMBtu}{hr}}{1020\frac{MMBtu}{MMscf}}} \times .95$$

6. 40 CFR 60, Subpart TTTT limits CO_2 to 120 lbs/MMBtu.
7. CO & VOC emissions are calculated using manufacturer guarantees of 9 ppmvd & 1.4 ppmvw, respectively. Methane and nitrous oxide emission factors come from 40 CFR 98, Table C-2. Heavy metal emission factors come from EPRI Report No. 1005402, April 2002 and all other HAP emission factors come from AP-42, Table 3.1-3.

Emission Unit 107 – Natural Gas-fired Auxiliary Boiler

Pollutant	Emission Limit or Standard	Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
PM	0.10 lb/MMBtu	401 KAR 59:015, Section 4(1)(b)	0.01 lb/MMBtu, RACT/BACT/LAER	Compliance is assumed while burning natural gas
Opacity	20%, 6-minute average	401 KAR 59:015, Section 4(2)	N/A	Compliance is assumed while burning natural gas
SO_2	0.8 lb/MMBtu	401 KAR 59:015, Section 5(1)(b)(1)	2.79E-3 MMBtu/hr, AP-42, Section 1.4	Compliance is assumed while burning natural gas

Emission Unit 107 – Natural Gas-fired Auxiliary Boiler

Initial Construction Date: 2015

Process Description:
The natural gas-fired auxiliary boiler (80 MMBtu/hr maximum rated heat input capacity) supplies steam to various equipment. The steam is used to maintain turbine steam seals during startups, preheat the condenser, aid in dissolved oxygen removal during startup, and provide freeze protection. NO_x emissions are controlled by utilizing a low-NO_x burner and flue gas recirculation (FGR). Additionally, the auxiliary boiler will include an oxygen (O_2) trim system. CO emissions are controlled through good combustion practices. The auxiliary boiler is expected to operate as needed.

Applicable Regulations:
401 KAR 59:015, Indirect Heat Exchangers

401 KAR 60:005, Section 2(2)(d), 40 CFR 60.40c to 60.48c (Subpart Dc), Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

Non-Applicable Regulations:
401 KAR 63:002, Section 2(4)(iiii), 40 CFR 63.7480 through 63.7575, Tables 1 through 13 (Subpart DDDDD), National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters

401 KAR 63:002, Section 2(4)(jjjjj), 40 CFR 63.11193 through 63.11237, Tables 1 through 8 (Subpart JJJJJJ), National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources

Comments:
Most of the emission factors for natural gas combustion are from AP-42, 5th Edition, Section 1.4. Emission factors for PM are based on EPA's RACT/BACT/LEAR Clearinghouse. NO_x and CO are based on manufacturer's data for natural gas combustion. The sulfur dioxide emission factor is based on 10,000 grains sulfur per million scf and 95% oxidation to SO_2 and 5% oxidation to sulfuric acid. Annual emissions are estimated using 8,760 hr/yr operation. Actual emissions will be much less.

With the removal of EU 3, coal fired boiler, the facility is no longer a major source of HAPs and so 40 CFR 63, Subpart DDDDD is no longer applicable to this unit. 40 CFR 63, Subpart JJJJJJ is not applicable to EU 107 as it is a natural gas fired boiler.

Emission Unit 108-110 – Dew Point Natural Gas-Fired Heaters for EUs 120-125

Pollutant	Emission Limit or Standard	Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
PM	0.10 lb/MMBtu	401 KAR 59:015, Section 4(1)(b)	0.01 lb/MMBtu, RACT/BACT/LAER	Compliance is assumed while burning natural gas
Opacity	20%, based on a 6-minute average	401 KAR 59:015, Section 4(2)	N/A	Compliance is assumed while burning natural gas

Emission Unit 108-110 – Dew Point Natural Gas-Fired Heaters for EUs 120-125				
SO_2	0.80 lb/MMBtu	401 KAR 59:015, Section 5(1)(b)(1)	2.79E-3 MMBtu/hr, AP-42, Section 1.4	Compliance is assumed while burning natural gas

Initial Construction Date: 2015

Process Description:
The combustion turbines require the temperature of the natural gas at the turbine interface to be above the dew point of any natural gas constituent. To achieve this, three (3) dew-point natural gas heaters are utilized. The natural gas-fired gas heaters (13.5 MMBtu/hr maximum rated heat input capacity per heater) are indirect water-bath heaters having a shell-and-tube heat exchanger configuration. CO emissions are controlled through good combustion practices. The gas heaters will include an oxygen (O_2) trim system. Each dew-point gas heater can provide 100 percent of the natural gas required for the combined-cycle facility, but each is proposed to operate year-round.

Applicable Regulations:
401 KAR 59:015, New indirect heat exchangers

401 KAR 60:005, Section 2(2)(d), 40 CFR 60.40c to 60.48c (Subpart Dc), Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

Non-Applicable Regulations:
401 KAR 63:002, Section 2(4)(iiii), 40 CFR 63.7480 through 63.7575, Tables 1 through 13 (Subpart DDDDD), National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters

401 KAR 63:002, Section 2(4)(jjjjj), 40 CFR 63.11193 through 63.11237, Tables 1 through 8 (Subpart JJJJJJ), National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources

Comments:
Most of the emission factors for natural gas combustion are from AP-42, 5th Edition, Section 1.4. Emission factors for PM are based on EPA's RACT/**BACT**/LEAR Clearinghouse. NO_x, CO, and VOC emission factors are based on manufacturer's data for natural gas combustion. The sulfur dioxide emission factor is based on 10,000 grains sulfur per million scf and 95% oxidation to SO_2 and 5% oxidation to sulfuric acid. Annual emissions are estimated using 8,760 hr/yr operation.

With the removal of EU 3, coal fired boiler, the facility is no longer a major source of HAPs and so 40 CFR 63, Subpart DDDDD is no longer applicable to this unit. 40 CFR 63, Subpart JJJJJJ is not applicable to EU 108-110 as each is a natural gas fired heater and not a boiler as defined in 40 CFR 63.11237.

Emission Unit 141-143 – Dew Point Natural Gas-Fired Heaters for EUs 137-139				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
PM	0.30 lbs/MMBtu	401 KAR 59:015, Section 4(1)(c)	13.87 lbs/MMscf, Manufacturer Data	Compliance is assumed while combustion natural

Emission Unit 141-143 – Dew Point Natural Gas-Fired Heaters for EUs 137-139				
	20% Opacity	401 KAR 59:015, Section 4(2)(b)		gas
SO_2	0.99 lbs/MMBtu	401 KAR 59:015, Section 5(1)(c)2.b.	95% of 0.6 lbs/MMBtu, AP-42, Table 1.4-2	

Initial Construction Date: Proposed May 2023

Process Description:
The combustion turbines require the temperature of the natural gas at the turbine interface to be above the dew point of any natural gas constituent. To achieve this, three (3) dew-point natural gas heaters are utilized. The natural gas-fired heaters (10 MMBtu/hr maximum rated heat input capacity per heater) are indirect water-bath heaters having a shell-and-tube heat exchanger configuration. CO emissions are controlled through good combustion practices. The gas heaters will include an oxygen (O_2) trim system and dry low-nitrogen oxide (DLN) combustors.

Applicable Regulations:
401 KAR 59:015, New indirect heat exchangers

401 KAR 60:005, Section 2(2)(d), 40 CFR 60.40c to 60.48c (Subpart Dc), Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

Non-Applicable Regulations:
401 KAR 63:002, Section 2(4)(iiii), 40 CFR 63.7480 through 63.7575, Tables 1 through 13 (Subpart DDDDD), National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters

401 KAR 63:002, Section 2(4)(jjjjj), 40 CFR 63.11193 through 63.11237, Tables 1 through 8 (Subpart JJJJJJ), National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources

Comments:
Most of the emission factors for natural gas combustion are from AP-42, 5th Edition, Section 1.4. The CO, NO_x, PM, VOC, and Sulfuric Acid emission factors are based on manufacturer's data for natural gas combustion. The sulfur dioxide emission factor is based on 0.2 grains of sulfur per 100 scf with 95% oxidation to SO_2 and 5% oxidation to sulfuric acid. Annual emissions are estimated using 3,405 hr/yr operation.

Emission Unit 104 - Diesel-Fired Emergency Engine

Initial Construction Date: 2006
Manufacture Date: 10/25/2005

Process Description:
Paradise Fossil Plant installed a two-way radio system emergency diesel engine in 2006. The Cummins Model DGCA-5742774 generator engine (manufactured 10/24/2005) is rated at 90 horsepower. The heat input rating for the diesel engine is 0.690 MMBtu/hr based on diesel fuel input of 4.9 gallons per hour and diesel heat content of 140,000 Btu/gallon. The engine is limited to 100 hours of operation during any twelve consecutive months for maintenance and readiness testing. Combustion gases from the engine discharge to the atmosphere through one stack.

Applicable Regulation:
401 KAR 63:002, Section 2(4)(eeee), 40 CFR 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (Subpart ZZZZ), National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

Non-applicable Regulation:
401 KAR 60:005, Section 2(2)(dddd), 40 CFR 60.4200 to 60.4219, Tables 1 to 8 (Subpart IIII), Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

Comments:
APE20140002: Engine added to permit
APE20170007: Engine manufactured date provided by facility
APE20170009: Facility requested 40 CFR 60, Subpart IIII to be a non-applicable regulation, as the engine was manufactured before April 1, 2006.
APE20200008: The facility went from a major source of HAPs to an area source; therefore, engine requirements changed from Table 2c to 2d.

The engine is considered an existing emergency engine located at an area source for HAPs. Potential hourly emissions for particulate, hydrocarbons, and carbon monoxide are calculated using the Tier 2 emission standards for 2005 model year engines multiplied by a factor of 1.25 for not-to-exceed emissions. The NOx potential hourly emissions are based on the permit limit from 40 CFR 60.4205(a), Table 1. The emission factor for sulfur dioxide is based on 15 ppm sulfur and 95% of the sulfur oxidized to SO2 and 5% to H_2SO_4. Hazardous air pollutants are based on AP-42, 5th edition, Section 3.3. Potential annual emissions are based on 500 hours per year based on EPA's definition of hours of operation for an emergency engine.

Emission Unit 115 - Diesel-Fired Fire Pump (emergency engine)

Initial Construction Date: 2015

Process Description:
Paradise Combined Cycle Facility installed an emergency diesel engine fire pump in 2015. The Clarke Model JU6H-UFADS8 fire pump has a John Deere Model 6068HFC48 diesel engine rated at 252 hp. The heat input rating for the diesel engine is 1.96 MMBtu/hr based on diesel fuel input of 14 gallons per hour and diesel heat content of 140,000 Btu/gallon. The engine is limited to 100 hours of operation during any twelve consecutive months for maintenance and readiness testing. Combustion gases from the engine discharge to the atmosphere through one stack.

Applicable Regulation:
401 KAR 60:005, Section 2(2)(dddd), 40 CFR 60.4200 to 60.4219, Tables 1 to 8 (Subpart IIII), Standards of Performance for Stationary Compression Ignition Internal Combustion Engines;

401 KAR 63:002, Section 2(4)(eeee), 40 CFR 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (Subpart ZZZZ), National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

Note: D.C. Circuit Court [*Delaware v. EPA*, 785 F. 3d 1 (D.C. Cir. 2015)] has vacated the provisions in 40 CFR 60, Subpart IIII that contain the 100-hour exemption for operation of emergency engines for purposes of emergency demand response under 40 CFR 60.4211(f)(2)(ii)-(iii). The D.C. Circuit Court issued the mandate for the vacatur on May 4, 2016.

Comments:
Potential hourly emissions for particulate, nitrogen oxides plus hydrocarbons, and carbon monoxide are calculated based on permit limits from 40 CFR 60.4205(c), Table 4. The emission factor for sulfur dioxide is based on 15 ppm sulfur and 95% of the sulfur oxidized to SO2 and 5% to H_2SO_4. Hazardous air pollutants are based on AP-42, 5th edition, Section 3.3. Potential annual emissions are based on 500 hours per year based on EPA's definition of hours of operation for an emergency engine.

Emission Unit 128 - Propane Emergency Engine (telecommunications)

Initial Construction Date: 10/2016

Process Description:
Paradise Fossil Plant has an emergency telecommunication propane generator. The Generac generator, Model RG025, is rated at 25 kW electrical (42 hp). The heat input rating for the propane engine is 0.430 MMBtu/hr based on propane fuel input of 4.7 gallons per hour and propane heat content of 91,500 Btu/gallon. The engine is limited to 100 hours of operation during any twelve consecutive months for maintenance and readiness testing. Combustion gases from the engine discharge to the atmosphere through one stack.

Applicable Regulation:
401 KAR 60:005, Section 2(2)(eee), 40 CFR 60.4230 to 60.4248, Tables 1 to 4 (Subpart JJJJ), Standards of Performance for Stationary Spark Ignition Internal Combustion Engines;

401 KAR 63:002, Section 2(4)(eeee), 40 CFR 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (Subpart

Emission Unit 128 - Propane Emergency Engine (telecommunications)

ZZZZ), National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

Note: D.C. Circuit Court [*Delaware v. EPA*, 785 F. 3d 1 (D.C. Cir. 2015)] has vacated the provisions in 40 CFR 60, Subpart JJJJ that contain the 100-hour exemption for operation of emergency engines for purposes of emergency demand response under 40 CFR 60.4243(d)(2)(ii)-(iii). The D.C. Circuit Court issued the mandate for the vacatur on May 4, 2016.

Comments:
Potential hourly emissions are calculated using the emission limit (40 CFR Part 60 Subpart JJJJ) for spark ignition standby propane engines for nitrogen oxides plus hydrocarbon and carbon monoxide. The emission factors for particulate and sulfur dioxide are from San Diego Air Pollution Control District, Uncontrolled Propane-Fired Internal Combustion Engine, 6/1999. Potential annual emissions are based on 500 hours per year based on EPA's definition of hours of operation for an emergency engine.

Emission Unit 130 - Unpaved Haul Roads for Dewatered Gypsum Transportation

Initial Construction: 6/1/2018

Process Description:
Fugitive emissions occur from the transportation of dewatered gypsum along an unpaved haulroad. Haulroad emissions estimation are derived using the unpaved road emission equation in AP-42 Section 13.2.2. Due to bottlenecking maximum emissions are based on the operation of hauling dewatered gypsum to 7.8 miles per hour and 32,800 miles per year.

Applicable Regulation:
401 KAR 63:010, Fugitive emissions

Comments:
To preclude 401 KAR 51:017, Section 8 to 16 the permittee shall: Apply and maintain gravel on the unpaved road; Apply water or chemical suppression daily and whenever visible emissions are observed; Apply silt fences where it is appropriate; Limit vehicular speed to 20 miles per hour, and limit the distance traveled to 32,800 miles per 12-month rolling total; by doing so the Division has determined that a 90% control efficiency is sufficient while calculating haul road emissions.

Emission Unit 133D and 135D - Fly Ash and Gypsum Drop Points

Pollutant	Emission Limit or Standard	Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
PM	$E=3.59P^{0.62}$, where E is the emission rate in lb/hr and P is the process weight rate in tons/hr	401 KAR 59:010, Section 3(2)	133A&D, 134A-C, 134F (AP-42 13.2.4) PT - 2.12E-4 lb/ton PM_{10} - 1.00E-4 lb/ton $PM_{2.5}$ - 1.52E-5 lb/ton 134D (EPA, 1992, 2.3.1.3.3)	

Emission Unit 133D and 135D - Fly Ash and Gypsum Drop Points				
			PT - 2.08 lb/ton PM_{10} - 1.04 lb/ton $PM_{2.5}$ - 1.04 lb/ton	
Opacity	20% based on 6-minute average	401 KAR 59:010, Section 3(1)(a)	----	Weekly qualitative visual observations, followed by U.S. EPA Reference Method 9 if necessary

Initial Construction Date: 6/1/2018

Process Description:
Equipment associated with dewatered gypsum handling, including an articulated truck unloading fly ash at the landfill with a maximum operating rate of 141.26 tons/hr and an articulated truck unloading gypsum at the landfill with a maximum operating rate of 448 tons/hr.

Applicable Regulation:
401 KAR 59:010, New process operations, applicable to each affected facility, associated with a process operation, which is not subject to another emission standard with respect to particulates, commenced on or after July 2, 1975.

Precluded Regulations:
401 KAR 51:017, Section 8 to 16, Prevention of significant deterioration of air quality, these units shall limit the amount of throughput in order to avoid New Source Review.

Comments:
For handling and storage piles, AP-42, Section 13.2.4, $E = k(0.0032)((U/5)^{1.3}/(M/2)^{1.4})$; where E = emission factor in lb/ton; k = particle size multiplier; U = mean wind speed, mph; and M = material moisture constant (%)

Emission Unit	Description	Emission Factor	Emission Factor Reference	Control Devices & Efficiency
133D	Articulated truck unloading fly ash at landfill	PT-2.12×10^{-4} lb/ton PM_{10}-1.00×10^{-4} lb/ton $PM_{2.5}$- 1.52×10^{-5} lb/ton	AP-42, Section 13.2.4	Dust Suppression (95%); shall maintain a moisture content of 15%
135D	Articulated truck unloading gypsum at landfill	PT-2.12×10^{-4} lb/ton PM_{10}-1.00×10^{-4} lb/ton $PM_{2.5}$- 1.52×10^{-5} lb/ton	AP-42, Section 13.2.4	None (0%)

Emission Unit 133B, 134E, 135A, & 135B - Paved Roads

Initial Construction Date: 10/2018

Process Description:

Emission Unit	Description	Max. Operating Rate	Control Devices
133B	Conditioned Fly Ash Hauling in Articulated Trucks to Landfill – Round Trip	141.2 tons/hr	Water or Chemical Suppression, Silt Fences, Limit Vehicular Speed
134E	Gypsum Hauling in Articulated Trucks on Landfill – Round Trip	5 mph	
135A	Gypsum Hauling to Offsite Location – Round Trip	448 tons/hr	
135B	Gypsum Hauling in Articulated Trucks to Landfill – Round Trip	448 tons/hr	

Applicable Regulation:
401 KAR 63:010, Fugitive emissions, applicable to an apparatus, operation, or road which emits or may emit fugitive emissions provided that the fugitive emissions from such facility are not elsewhere subject to an opacity standard within the administrative regulations of the Division for Air Quality.

Comments:
These units precluded 401 KAR 51:017, Sections 8 to 16, by limiting its throughput during any 12-month rolling total.

Emission Unit	Maximum throughput on a 12-month rolling total
133B	181,137 tons
134E	17,472 tons
135A	931,840 tons
135B	931,840 tons

In order to validate a control efficiency of 95%, the permittee shall maintain the following conditions: Apply water or chemical suppression daily and whenever visible emissions are observed; Apply silt fences where it is appropriate; and Limit vehicular speed to 20 miles per hour

For paved roads, AP-42, Section 13.2.1, $E = k(sL)^{0.91}(W)^{1.02}$, where E = the particulate emission factor (having units mating the units of k; k = particle size multiplier for particle size range and units of interest; sL = road surface silt loading (grams per square meter (g/m^2); and W = average weight (tons) of the vehicles traveling the road

Emission Unit 133C, 135C, 136A, & 136B - Unpaved Landfill Travel

Initial Construction Date: 10/2018

Process Description:

Emission Unit	Description	Max. Operating Rate	Control Devices
133C	Conditioned Fly Ash Hauling in Articulated Trucks to Landfill – Round Trip	141.2 tons/hr	Water Suppression with 15% Moisture; Fly Ash & Gypsum Compaction
135C	Gypsum Hauling in Articulated Trucks on Landfill – Round Trip	448 tons/hr	
136A	Pile Maintenance Grading, Compacting, and Pipe Slope Shaping (Dozer)	4 mph	
136B	Pile Maintenance Compacting (Roller	4 mph	

Applicable Regulation:
401 KAR 63:010, Fugitive emissions, applicable to an apparatus, operation, or road which emits or may emit fugitive emissions provided that the fugitive emissions from such facility are not elsewhere subject to an opacity standard within the administrative regulations of the Division for Air Quality.

Precluded Regulations:
401 KAR 51:017, Section 8 to 16, Prevention of significant deterioration of air quality, these units shall limit the amount of throughput in order to avoid New Source Review.

Comments:
In order to preclude 401 KAR 51:017, Section 8 to 16, the permittee shall limit the maximum annual throughput to the following

Emission Unit	Maximum throughput on a 12 month rolling total:
133C	181,137 tons
135C	931,840 tons
136A	8,320 miles
136B	4,160 miles

For unpaved roads, AP-42, Section 13.2.2, $E = k(S/12)^a(W/3)^b$, where E = size-specifc emission factor (lb/VMT); s = surface material silt content (%); W = mean vehicle weight (tons); S = mean vehicle speed (mph); where k, a, and b are constants provided in Reference 6 of AP-42 Section 13.2.2

For wind erosion of frequently disturbed pile, EPA, 1992, Section 2.3.1.3.3, E = 1.7*(sL/1.5)*((365-P)/235)*(%/15), where E = emission factor in lb/acre; sL = silt content; P is the number of wet days per year; and % is the percentage where the wind exceeds 12 miles per hour. When calculating PM_{10} and $PM_{2.5}$, E is multiplied by 0.5.

Emission Unit 134D & 136C - Open Storage Piles

Initial Construction Date: Proposed 2017-2018

Process Description:
Fly ash and gypsum is hauled and stacked prior to dumping into the landfill. Erosion from the wind can contribute to fugitive emissions.

Applicable Regulation:
401 KAR 63:010, Fugitive emissions, applicable to each affected facility, associated with a process operation, which is not subject to another emission standard with respect to particulates, commenced on or after July 2, 1975.

Precluded Regulations:
401 KAR 51:017, Section 8 to 16, Prevention of significant deterioration of air quality, these units shall limit the amount of throughput in order to avoid New Source Review.

Comments:
In order to preclude 401 KAR 51:017, Section 8 to 16, In order to achieve a control efficiency of 95%, the permittee shall maintain a moisture content on the working face of the impoundment to 15%.

For handling and storage piles, AP-42, Section 13.2.4, $E = k(0.0032)((U/5)^{1.3}/(M/2)^{1.4})$; where E = emission factor in lb/ton; k = particle size multiplier; U = mean wind speed, mph; and M = material moisture constant (%)

For wind erosion of frequently disturbed pile, EPA, 1992, Section 2.3.1.3.3, E = 1.7*(sL/1.5)*((365-P)/235)*(%/15), where E = emission factor in lb/acre; sL = silt content; P is the number of wet days per year; and % is the percentage where the wind exceeds 12 miles per hour. When calculating PM_{10} and $PM_{2.5}$, E is multiplied by 0.5**.**

Emission Unit 114 – 16 Cell Cooling Towers for CT's				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
PM	2.58 lbs/hr if the process rate is 0.5 tons/hr or less	401 KAR 59:010, Section 3(2)	$1.93x10^{-5}$ lb/ton AP-42 Section 13.4	Drift Eliminators (control efficiency accounted for in emission factor)
	$3.59P^{0.62}$ lbs/hr, where P is the process rate in tons/hr if the process rate is greater than 0.5 tons/hr and less than or equal to 30 tons/hr			

Emission Unit 114 – 16 Cell Cooling Towers for CT's				
	$17.31P^{0.16}$ lbs/hr if the process rate is greater than 30 tons/hr			
	20% opacity	401 KAR 59:010, Section 3(1)(a)	----	----

Initial Construction Date: 11/2015

Process Description:
Paradise Combined Cycle Facility (PAC) has a 16 cell mechanical-draft counter-flow cooling tower that provides cooling for the condensing steam turbine exhaust and the plant auxiliary equipment. It serves the design heat duty with a circulating cooling water flow rate of 289,000 gallons per minute. The drift rate will not exceed 0.0005 percent. Drift eliminators are installed to reduce the particulate emissions. The cooling tower is complete with pumps, water chemistry control, and fire protection.

Applicable Regulation:
401 KAR 59:010, This regulation is applicable to each affected facility, associated with a process operation, which is not subject to another emission standard with respect to particulates, commenced on or after July 2, 1975. Units were constructed in 2015.

Comments:
Emissions from the cooling tower are determined from the circulating cooling water rate of 289,000 gallons per minute, design drift efficiency of 0.0005%, a concentration factor of 10, and intake water quality data. Particulate emissions are based on the total-solids content of the cooling water 1,100 ppm (350 ppm total dissolved solids + 750 ppm total suspended solids). Annual emissions are based on continuous operation of the cooling towers.

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS (CONTINUED)

Testing Requirements\Results

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
137	Dry Low NOx	SO_2	40 CFR 60.4415(a)	Initial	As Directed by 40 CFR 60.4415(a)	$0.06\frac{lb}{MMBtu}$	TBD	TBD	TBD	TBD
138										
139										
137	Dry Low NOx	NOx	40 CFR 60, Subpart KKKK	9 RATA Runs (Initial)	7E	15 ppm NOx @ 15% O_2	TBD	TBD	TBD	TBD
		CO			10					
		O_2			3A					
138		NOx			7E		TBD	TBD		
		CO			10					
		O_2			3A					
139		NOx			7E		TBD	TBD		
		CO			10					
		O_2			3A					
Unit 3	Wet Scrubber	PM	40 CFR 63, Subpart UUUUU & 401 KAR 61:015, Section 4(1)(a)	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.03\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.0068\frac{lb}{MMBtu}$	951.3 MW	CMN20200002	1/16/2020
Unit 3	Wet Scrubber	PM	40 CFR 63, Subpart UUUUU & 401 KAR 61:015,	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.03\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.0065\frac{lb}{MMBtu}$	940.3 MW	CMN20190004	6/18/2019

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
			Section 4(1)(a)							
Unit 3	Wet Scrubber	PM	40 CFR 63, Subpart UUUUU & 401 KAR 61:015, Section 4(1)(a)	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.03\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.048\frac{lb}{MMBtu}$	972 MW	CMN20180007	6/20/2018
Unit 3	Wet Scrubber	PM	40 CFR 63, Subpart UUUUU & 401 KAR 61:015, Section 4(1)(a)	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.03\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.023\frac{lb}{MMBtu}$	908 MW	CMN20170011	8/22/2017
Unit 3	Wet Scrubber	PM	40 CFR 63, Subpart UUUUU & 401 KAR 61:015, Section 4(1)(a)	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.03\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.020\frac{lb}{MMBtu}$	944 MW	CMN20170009	7/13/2017
Unit 1	Dry Scrubber	PM & HCl	40 CFR 63, Subpart UUUUU	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.03\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	N/A	N/A	CMN20170004	Testing was canceled as Unit 1 was no longer operational

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
120	Selective Catalytic Reduction & Catalytic Oxidation inherent for each HRSG	NOx	40 CFR 60, Subpart KKKK	9 RATA Runs (Initial)	7E	15 ppm NOx @ 15% O_2	6.89%	337 MW	CMN20170003	3/24-25/2017
		CO			10		0.00%			
		O_2			3A		1.28%			
121		NOx			7E		7.63%	334 MW		
		CO			10		0.112 ppm @ 15% O_2			
		O_2			3A		0.74%			
122		NOx			7E		7.21%	395 MW		
		CO			10		0.00%			
		O_2			3A		2.33%			
Unit 3	Wet Scrubber	PM	40 CFR 63, Subpart UUUUU & 401 KAR 61:015, Section 4(1)(a)	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.03\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.048\frac{lb}{MMBtu}$	972 MW	CMN20170002	6/15/2017
123 (CT1)	Dry Low NOx	NOx	40 CFR 63, Subpart KKKK	9 RATA runs (Initial)	7E	7.5% for annual test frequency	6.20% RA	224 MW	CMN20160030	12/6-8/2016
		CO			10	10 when div. by RM; 5 when div. by EM; 5 ppm when using abs. avg. diff + conf.coeff.	0.24% RA			

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
		O_2			3A	7.5% for annual test frequency	2.22% RA			
124 (CT2)		NOx			7E	7.5% for annual test frequency	2.56% RA	232 MW		
		CO			10	10 when div. by RM; 5 when div. by EM; 5 ppm when using abs. avg. diff + conf.coeff.	0.06% RA			
		O_2			3A	7.5% for annual test frequency	0.00% RA			
125 (CT3)		NOx			7E	7.5% for annual test frequency	2.95% RA	227 MW		
		CO			10	10 when div. by RM; 5 when div. by EM; 5 ppm when using abs. avg. diff + conf.coeff.	0.09% RA			
		O_2			3A	7.5% for annual test frequency	0.28% RA			

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
Unit 3	Wet Scrubber	PM	40 CFR 63, Subpart UUUUU & 401 KAR 61:015, Section 4(1)(a)	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.03\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.017\frac{lb}{MMBtu}$	714 MW	CMN20160029	11/2/2016
Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A,	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.052\frac{lb}{MMBtu}$	495 MW	CMN20160028	12/6/2016 12/7/2016
		HCl	40 CFR 63, Subpart UUUUU		U.S. EPA Reference Method 26 A	$0.002\frac{lb}{MMBtu}$	$0.00044\frac{lb}{MMBtu}$	510 MW		
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A,	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.049\frac{lb}{MMBtu}$	546 MW	CMN20160027	12/20/2016
		HCl	40 CFR 63, Subpart UUUUU		U.S. EPA Reference Method 26 A	$0.002\frac{lb}{MMBtu}$	$0.000213\frac{lb}{MMBtu}$	236 MW		12/21/2016

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
Unit 3	Wet Scrubber	PM	40 CFR 63, Subpart UUUUU & 401 KAR 61:015, Section 4(1)(a)	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.03\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.011\frac{lb}{MMBtu}$	891 MW	CMN20160026	9/13/2016
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A,	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.053\frac{lb}{MMBtu}$	516 MW	CMN20160022	7/26/2016 7/27/2016
		HCl	40 CFR 63, Subpart UUUUU		U.S. EPA Reference Method 26A	$0.002\frac{lb}{MMBtu}$	$0.0003\frac{lb}{MMBtu}$	518 MW		
Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.046\frac{lb}{MMBtu}$	548 MW	CMN20160021	7/28/2016
Unit 1		PM	401 KAR 61:015, Section	3 runs per test (1-hour each)	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.053\frac{lb}{MMBtu}$	516 MW	CMN20160020	7/26/2016

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
		HCl	4(1)(a), Appendix A, 40 CFR 63, Subpart UUUUU	Quarterly	U.S. EPA Reference Method 26A	0.002 $\frac{lb}{MMBtu}$	0.0003 $\frac{lb}{MMBtu}$	518 MW		7/27/2016
Unit 1	Dry Scrubber	Hg	40 CFR 63, Subpart UUUUU		U.S. EPA Reference Method 30B		0.756$\frac{ug}{m\^3}$	563 MW	CMN20160017	6/9/2016
Unit 2	Dry Scrubber	Hg	40 CFR 63, Subpart UUUUU		U.S. EPA Reference Method 30B		0.188$\frac{ug}{m\^3}$	551 MW	CMN20160015	6/30/2016
Unit 3	Wet Scrubber	PM	40 CFR 63, Subpart UUUUU & 401 KAR 61:015, Section 4(1)(a)	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	0.03$\frac{lb}{MMBtu}$ & 0.09$\frac{lb}{MMBtu}$	0.012$\frac{lb}{MMBtu}$	955 MW	CMN20160012	6/1/2016
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a),	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	0.11$\frac{lb}{MMBtu}$ & 0.09$\frac{lb}{MMBtu}$	0.052$\frac{lb}{MMBtu}$	599 MW	CMN20160006	5/3/2016

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
		HCl	Appendix A, 40 CFR 63, Subpart UUUUU			0.002 $\frac{lb}{MMBtu}$	0.0005 $\frac{lb}{MMBtu}$	597 MW		5/4/2016
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	0.11$\frac{lb}{MMBtu}$ & 0.09$\frac{lb}{MMBtu}$	0.052$\frac{lb}{MMBtu}$	552 MW	CMN20160005	6/2/2016
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	0.11$\frac{lb}{MMBtu}$ & 0.09$\frac{lb}{MMBtu}$	0.046$\frac{lb}{MMBtu}$	605 MW	CMN20160003	3/8/2016
Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	0.11$\frac{lb}{MMBtu}$ & 0.09$\frac{lb}{MMBtu}$	0.056$\frac{lb}{MMBtu}$	552 MW	CMN20160002	2/24/2016
Unit 3	Wet Scrubber	PM	40 CFR 63, Subpart UUUUU & 401 KAR 61:015,	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	0.11$\frac{lb}{MMBtu}$ & 0.09$\frac{lb}{MMBtu}$	0.010$\frac{lb}{MMBtu}$	953 MW	CMN20160001	3/10/2016

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
			Section 4(1)(a)							
Unit 3	Wet Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.003\frac{lb}{MMBtu}$	997 MW	CMN20150030	12/2/2015
Unit 3	Wet Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.012\frac{lb}{MMBtu}$	991 MW	CMN20150026	12/1/2015
Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.055\frac{lb}{MMBtu}$	595 MW	CMN20150024	11/17/2015
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.044\frac{lb}{MMBtu}$	628 MW	CMN20150023	11/5/2015

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
Unit 3	Wet Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.028\frac{lb}{MMBtu}$	946 MW	CMN20150020	8/26/2015
Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.059\frac{lb}{MMBtu}$	607 MW	CMN20150019	8/25/2015
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.053\frac{lb}{MMBtu}$	607 MW	CMN20150018	8/27/2015
Unit 3	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	N/A, monitor was not connected	N/A	CMN20150017	6/22/2015 6/25/2015
Unit 3	Sorbent Trap	Hg	40 CFR 63, Subpart UUUUU	Initial & quarterly/ or Hg CEMS	U.S. EPA Reference Method 30B	$1.00\frac{ug}{m\text{^}3}$	$0.15\ \frac{ug}{m\text{^}3}$	978 MW	CMN20150015	7/24/2015

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.058\frac{lb}{MMBtu}$	625 MW	CMN20150009	5/20/2015
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.057\frac{lb}{MMBtu}$	627 MW	CMN20150008	5/19/2015
Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.056\frac{lb}{MMBtu}$	625 MW	CMN20150002	1/21/2015
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.046\frac{lb}{MMBtu}$	653 MW	CMN20150001	2/3/2015
Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a),	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.046\frac{lb}{MMBtu}$	620 MW	CMN20140016	12/18/2014

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
			Appendix A							
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.065\frac{lb}{MMBtu}$	648 MW	CMN20140015	12/16/2014
Unit 3	Wet Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.012\frac{lb}{MMBtu}$	946 MW	CMN20140014	9/11/2014 9/12/2014
Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.065\frac{lb}{MMBtu}$	605 MW	CMN20140013	9/10/2014
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.055\frac{lb}{MMBtu}$	652 MW	CMN20140012	9/9/2014

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.059\frac{lb}{MMBtu}$	603 MW	CMN20140011	7/9/2014
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.054\frac{lb}{MMBtu}$	648 MW	CMN20140009	6/27/2014
Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.069\frac{lb}{MMBtu}$	628 MW	CMN20140003	3/18/2014
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.051\frac{lb}{MMBtu}$	674 MW	CMN20140002	5/1/2014
Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a),	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.074\frac{lb}{MMBtu}$	639 MW	CMN20130017	10/30/2013

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
			Appendix A							
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.056\frac{lb}{MMBtu}$	654 MW	CMN20130016	10/31/2013
Unit 2	Dry Scrubber	PM CPM Total	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B & Method 202	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.059\frac{lb}{MMBtu}$ $0.009\frac{lb}{MMBtu}$ $0.068\frac{lb}{MMBtu}$	627 MW	CMN20130014	8/28/2013
Unit 1	Dry Scrubber	PM CPM Total	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B & Method 202	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.073\frac{lb}{MMBtu}$ $0.004\frac{lb}{MMBtu}$ $0.077\frac{lb}{MMBtu}$	651 MW	CMN20130013	8/27/2013
Unit 3	Wet Scrubber	PM CPM	401 KAR 61:015, Section 4(1)(a),	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.020\frac{lb}{MMBtu}$ $0.049\frac{lb}{MMBtu}$	1009 MW	CMN20130010	8/29/2013

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
		Total	Appendix A		& Method 202		$0.069\frac{lb}{MMBtu}$			
Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.075\frac{lb}{MMBtu}$	610 MW	CMN20130009	6/18/2013
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.065\frac{lb}{MMBtu}$	669 MW	CMN20130008	5/3/2013
Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.065\frac{lb}{MMBtu}$	666 MW	CMN20130003	2/26/2013
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.044\frac{lb}{MMBtu}$	613 MW	CMN20130002	3/19/2013

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.054\frac{lb}{MMBtu}$	652 MW	CMN20120017	12/5/2012
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.056\frac{lb}{MMBtu}$	644 MW	CMN20120016	12/4/2012
Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.049\frac{lb}{MMBtu}$	664 MW	CMN20120014	8/28/2012
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.051\frac{lb}{MMBtu}$	654 MW	CMN20120014	8/29/2012

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
Unit 1	Dry Scrubber	PM CPM Total	401 KAR 61:015, Section 4(1)(a), Appendix A & Agreed Order AO-89-41D	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B & Method 202	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.059\frac{lb}{MMBtu}$ $0.100\frac{lb}{MMBtu}$ $0.159\frac{lb}{MMBtu}$	651 MW	CMN20120013	6/25/2012
Unit 2	Dry Scrubber	PM CPM Total	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B & Method 202	$0.11\frac{lb}{MMBtu}$	$0.096\frac{lb}{MMBtu}$ $0.081\frac{lb}{MMBtu}$ $0.177\frac{lb}{MMBtu}$	651 MW	CMN20120012	6/20/2012
Unit 2	Dry Scrubber	PM CPM Total	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B & Method 202	$0.11\frac{lb}{MMBtu}$	$0.022\frac{lb}{MMBtu}$ $0.039\frac{lb}{MMBtu}$ $0.061\frac{lb}{MMBtu}$	983 MW	CMN20120011	6/19/2012

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.080\frac{lb}{MMBtu}$	650 MW	CMN20120004	2/23/2012
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.051\frac{lb}{MMBtu}$	698 MW	CMN20120003	2/2/2012
Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B Method 202	$0.11\frac{lb}{MMBtu}$	$0.055\frac{lb}{MMBtu}$	610 MW	CMN20120002	1/27/2012
Unit 3	Wet Scrubber	PM CPM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B Method 202	$0.11\frac{lb}{MMBtu}$	$0.009\frac{lb}{MMBtu}$ $0.022\frac{lb}{MMBtu}$	1004 MW	CMN20110016	12/6/2011
Unit 2	Dry Scrubber	PM CPM	401 KAR 61:015, Section 4(1)(a),	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.038\frac{lb}{MMBtu}$ $0.047\frac{lb}{MMBtu}$	642 MW	CMN20110015	12/8/2011

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
			Appendix A		Method 202					
Unit 1	Dry Scrubber	PM CPM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B Method 202	$0.11\frac{lb}{MMBtu}$	$0.058\frac{lb}{MMBtu}$ $0.068\frac{lb}{MMBtu}$	642 MW	CMN20110014	10/16/2011
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.071\frac{lb}{MMBtu}$	615 MW	CMN20110013	9/21/2011
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.068\frac{lb}{MMBtu}$	632 MW	CMN20110011	9/13/2011
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.078\frac{lb}{MMBtu}$	618 MW	CMN20110010	3/29/2011

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
Unit 1 Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.072\frac{lb}{MMBtu}$ $0.076\frac{lb}{MMBtu}$	660 MW 657 MW	CMN20110009	6/29/2011 6/30/2011
Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ $0.09\frac{lb}{MMBtu}$	$0.067\frac{lb}{MMBtu}$	692 MW	CMN20110003	3/30/2011
									CMN20110001	Canceled
Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ $0.09\frac{lb}{MMBtu}$	$0.065\frac{lb}{MMBtu}$	698 MW	CMN20100015	12/16/2010
Unit 3	Wet Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.019\frac{lb}{MMBtu}$	979 MW	CMN20100013	12/15/2010

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ $0.09\frac{lb}{MMBtu}$	$0.125\frac{lb}{MMBtu}$	654 MW	CMN20100012	6/23/2010
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.065\frac{lb}{MMBtu}$	643MW	CMN20100011	9/29/2010
Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ $0.09\frac{lb}{MMBtu}$	$0.067\frac{lb}{MMBtu}$	644 MW	CMN20100010	7/29/2010
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.083\frac{lb}{MMBtu}$	656 MW	CMN20100008	6/22/2010
Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a),	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ $0.09\frac{lb}{MMBtu}$	$0.084\frac{lb}{MMBtu}$	683 MW	CMN20100007	3/15/2010

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
			Appendix A							
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.058\frac{lb}{MMBtu}$	673 MW	CMN20100002	3/16/2010
Unit 1 Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.051\frac{lb}{MMBtu}$ $0.064\frac{lb}{MMBtu}$	675 MW 648 MW	CMN20090013	12/17/2009 12/16/2009
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.060\frac{lb}{MMBtu}$	670 MW	CMN20090012	9/23/2009
Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ $0.09\frac{lb}{MMBtu}$	$0.095\frac{lb}{MMBtu}$	670 MW	CMN20090011	9/25/2009

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
Unit 3	Wet Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.022\frac{lb}{MMBtu}$	1087 MW	CMN20090010	9/24/2009
Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ $0.09\frac{lb}{MMBtu}$	$0.076\frac{lb}{MMBtu}$	90% of 704 MW	CMN20090008	3/25/2009
Unit 2 Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A & Agreed Order (AO-89-41D	3 runs per test (1-hour each) Quarterly X	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$ $0.09\frac{lb}{MMBtu}$	$0.095\frac{lb}{MMBtu}$ $0.056\frac{lb}{MMBtu}$	670 MW 670 MW	CMN20090007	6/17/2009 7/15/2009
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.075\frac{lb}{MMBtu}$	636 MW	CMN20090002	3/25/2009

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
Unit 1 Unit 2 Unit 3	Dry Scrubber Dry Scrubber Wet Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B Method 17	$0.11\frac{lb}{MMBtu}$	$0.067\frac{lb}{MMBtu}$ $0.085\frac{lb}{MMBtu}$ $0.010\frac{lb}{MMBtu}$	657 MW 673 MW 967 MW	CMN20080008	11/5/2008 11/6/2008 11/7/2008
Unit 1 Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.079\frac{lb}{MMBtu}$ $0.054\frac{lb}{MMBtu}$	587 MW 674 MW	CMN20080005	6/11/2008 6/18/2008
Unit 1 Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.062\frac{lb}{MMBtu}$ $0.062\frac{lb}{MMBtu}$ Unit 2 test failed no soot blow preform	692 MW 579 MW	CMN20080003	3/26/2008 3/31/2008
Unit 1 Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	Postpone	Postpone	CMN20070014	12/19/2007 pushed to 1/3/2008 due to issues after planned outage

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
Unit 1 Unit 2 Unit 3	Dry Scrubber Dry Scrubber Wet Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B (Units 1-2) Method 17 (Unit 3)	$0.11\frac{lb}{MMBtu}$	$0.057\frac{lb}{MMBtu}$ $0.058\frac{lb}{MMBtu}$ $0.007\frac{lb}{MMBtu}$	631 MW 637 MW 1004 MW	CMN20070012	8/15/2007 8/16/2007 8/17/2007
Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.044\frac{lb}{MMBtu}$	622 MW	CMN20070008	5/23/2007
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.045\frac{lb}{MMBtu}$	675 MW	CMN20070007	5/24/2007
Unit 1 Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.061\frac{lb}{MMBtu}$ $0.062\frac{lb}{MMBtu}$	674 MW 674 MW	CMN20070002	2/14/2007 2/16/2007
									CMN20060020	
									CMN20060019	

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A & Agreed Order	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5	$0.11\frac{lb}{MMBtu}$ & $0.09\frac{lb}{MMBtu}$	$0.079\frac{lb}{MMBtu}$	626 MW	CMN20060017	12/12/2006
Unit 1 Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.075\frac{lb}{MMBtu}$ $0.059\frac{lb}{MMBtu}$	629 MW 630 MW	CMN20060012	9/19/2006 9/20/2006
Unit 3	Wet Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.026\frac{lb}{MMBtu}$	1016 MW	CMN20060007	6/14/2006
Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.065\frac{lb}{MMBtu}$	626 MW	CMN20060006	7/11/2006

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.062\frac{lb}{MMBtu}$	685 MW	CMN20060005	6/13/2005
Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.074\frac{lb}{MMBtu}$	658 MW	CMN20060003	3/9/2006
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.067\frac{lb}{MMBtu}$	699 MW	CMN20060002	3/8/2006
Unit 3	Wet Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.042\frac{lb}{MMBtu}$	1051 MW	CMN20050011	12/20/2005
Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a),	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.066\frac{lb}{MMBtu}$	663 MW	CMN20050010	12/15/2005

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
			Appendix A							
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	2 runs (1-hour each) 1st run had an issue with the sampling location	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.104\frac{lb}{MMBtu}$	693 MW	CMN20050009	12/12/2005 and 12/14/2005
Unit 1 Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.090\frac{lb}{MMBtu}$ $0.078\frac{lb}{MMBtu}$	697 MW 659 MW	CMN20050006	9/14/2005 9/15/2005
Unit 1 Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.085\frac{lb}{MMBtu}$ $0.089\frac{lb}{MMBtu}$	704 MW 662 MW	CMN20050003	5/25/2005 5/26/2005
Unit 1 Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.066\frac{lb}{MMBtu}$ $0.069\frac{lb}{MMBtu}$	704 MW 686 MW	CMN20050001	2/9/2004 2/8/2004

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
Unit 1 Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.069\frac{lb}{MMBtu}$ $0.065\frac{lb}{MMBtu}$	701 MW 695 MW	CMN20040007	12/8/2004 12/9/2004
Unit 1 Unit 2 Unit 3	Dry Scrubber Dry Scrubber Wet Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B (Units 1-2) Method 17 (Unit 3)	$0.11\frac{lb}{MMBtu}$	$0.064\frac{lb}{MMBtu}$ $0.072\frac{lb}{MMBtu}$ $0.028\frac{lb}{MMBtu}$	692 MW 618 MW 1023 MW	CMN20040005	9/15/2004 9/14/2004 9/16/2004 – 9/17/2004
Unit 1 Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.053\frac{lb}{MMBtu}$ $0.064\frac{lb}{MMBtu}$	676 MW 636.7 MW	CMN20040003	6/23/2004 6/24/2004
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.076\frac{lb}{MMBtu}$	709 MW	CMN20040002	3/4/2004
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a),	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.070\frac{lb}{MMBtu}$	700.3 MW	CMN20040001	4/6/2004

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
			Appendix A							
Unit 2 Unit 3	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B (Unit 2) Method 17 (Unit 3)	$0.11\frac{lb}{MMBtu}$	$0.079\frac{lb}{MMBtu}$ $0.036\frac{lb}{MMBtu}$	674.6 MW 1020.1 MW	CMN20030005	12/17/2003 12/18/2003
Unit 1 Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.083\frac{lb}{MMBtu}$ $0.079\frac{lb}{MMBtu}$	632.3 MW 648.3 MW	CMN20030005	9/9/2003
Unit 1	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.084\frac{lb}{MMBtu}$	648.5 MW	CMN20030005	6/17/2003

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
Unit 1 Unit 2 Unit 2	Dry Scrubber	PM	401 KAR 61:015, Section 4(1)(a), Appendix A	3 runs per test (1-hour each) Quarterly	U.S. EPA Reference Method 5B	$0.11\frac{lb}{MMBtu}$	$0.106\frac{lb}{MMBtu}$ $0.109\frac{lb}{MMBtu}$ $0.083\frac{lb}{MMBtu}$	642 MW 637 MW 639 MW	CMN20030005	4/15/2003 4/14/2003 6/13/2003

SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS

Table A - Group Requirements:

Emission and Operating Limit	Regulation	Emission Unit
3,247 tpy of PM emissions 2,206 tpy of PM_{10} emissions 1,169 tpy of $PM_{2.5}$ emissions 34,680 tpy of SO_2 emissions 253 tpy of VOC emissions 6,027 tpy of NO_x emissions 1,070 tpy of CO emissions 1.5 tpy of Lead emissions 4,135 tpy of SO_3 emissions 9,792,740 tpy of CO_2 emissions	To preclude the applicability of 401 KAR 51:017, *Prevention of significant deterioration of air quality*	Emission Units 107, 108, 109, 110, 114, 115, 120-125
58.84 tpy of PM 25.79 tpy of PM_{10} Or 32,800 miles for EU130 & 181,137 tons 133D & 6,157 miles for 133B & 1,026 miles for 133C & 0.4 acres for 134D & 10,400 miles for 134E & 3,723 miles for 135A & 38,921 miles for 135B & 6,486 miles for 135C & 8,320 miles for 136A & 4,160 miles for 136B & 10 acres for 136C	To preclude the applicability of 401 KAR 51:017, *Prevention of significant deterioration of air quality*	Emission Units 130-136

SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS (CONTINUED)

Table B - Summary of Applicable Regulations:

Regulation	Basis of Determination	Emission Unit
401 KAR 51:017	*Prevention of significant deterioration for air quality,* Applicable to the construction of a new major stationary source or a project at an existing major stationary source that commences construction after September 22, 1982, and locates in an area designated attainment or unclassifiable.	EU 120-125
401 KAR 51:160	*NO_x requirements for large utility and industrial boilers,* Applies to NO_x budget units that are electric generating units or industrial boilers or turbines	EU 120-125 & 137-139
401 KAR 51:210	*CAIR NO_x annual trading program,* On May 12, 2005, U.S. EPA published the Clean Air Interstate Rule (CAIR). CAIR requires states to reduce emissions of nitrogen oxides and sulfur dioxide that contribute significantly to nonattainment and maintenance problems in downwind states with respect to the national ambient air quality standards for fine particulate matter ($PM_{2.5}$) and 8-hour ozone. Kentucky's regulations are codified in 401 KAR 51:210, CAIR NO_X annual trading program, 401 KAR 51:220, CAIR NO_X ozone season trading program, and 401 51:230, CAIR SO_2 trading program. On July 11, 2008, the United States Circuit Court of Appeals for the District of Columbia issued an opinion vacating and remanding CAIR to the U.S. EPA. A December 2008 court decision kept the requirements of CAIR in place temporarily but directed EPA to issue a new rule to implement Clean Air Act requirements concerning the transport of air pollution across state boundaries. On July 6, 2011, the U.S. EPA finalized the Cross-State Air Pollution Rule (CSAPR). On December 30, 2011, CSAPR was stayed prior to implementation. On April 29, 2014, the U.S. Supreme Court issued an opinion reversing an August 21, 2012 D.C. Circuit decision that had vacated CSAPR. Following the remand of the case to the D.C. Circuit, EPA requested that the court lift the CSAPR stay and toll the CSAPR compliance deadlines by three years. On October 23, 2014, the D.C. Circuit granted EPA's request. CSAPR implementation is now in place and replaces requirements under EPA's 2005 Clean Air Interstate Rule.	EU 120-125 &137-139
401 KAR 51:220	*CAIR NO_x ozone season trading program,* On May 12, 2005, U.S. EPA published the Clean Air Interstate Rule (CAIR). CAIR requires states to reduce emissions of	EU 120-125 &137-139

SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS (CONTINUED)

	nitrogen oxides and sulfur dioxide that contribute significantly to nonattainment and maintenance problems in downwind states with respect to the national ambient air quality standards for fine particulate matter ($PM_{2.5}$) and 8-hour ozone. Kentucky's regulations are codified in 401 KAR 51:210, CAIR NO_X annual trading program, 401 KAR 51:220, CAIR NO_X ozone season trading program, and 401 51:230, CAIR SO_2 trading program. On July 11, 2008, the United States Circuit Court of Appeals for the District of Columbia issued an opinion vacating and remanding CAIR to the U.S. EPA. A December 2008 court decision kept the requirements of CAIR in place temporarily but directed EPA to issue a new rule to implement Clean Air Act requirements concerning the transport of air pollution across state boundaries. On July 6, 2011, the U.S. EPA finalized the Cross-State Air Pollution Rule (CSAPR). On December 30, 2011, CSAPR was stayed prior to implementation. On April 29, 2014, the U.S. Supreme Court issued an opinion reversing an August 21, 2012 D.C. Circuit decision that had vacated CSAPR. Following the remand of the case to the D.C. Circuit, EPA requested that the court lift the CSAPR stay and toll the CSAPR compliance deadlines by three years. On October 23, 2014, the D.C. Circuit granted EPA's request. CSAPR implementation is now in place and replaces requirements under EPA's 2005 Clean Air Interstate Rule.	
401 KAR 51:230	*CAIR SO_2 trading program*, On May 12, 2005, U.S. EPA published the Clean Air Interstate Rule (CAIR). CAIR requires states to reduce emissions of nitrogen oxides and sulfur dioxide that contribute significantly to nonattainment and maintenance problems in downwind states with respect to the national ambient air quality standards for fine particulate matter ($PM_{2.5}$) and 8-hour ozone. Kentucky's regulations are codified in 401 KAR 51:210, CAIR NO_X annual trading program, 401 KAR 51:220, CAIR NO_X ozone season trading program, and 401 51:230, CAIR SO_2 trading program. On July 11, 2008, the United States Circuit Court of Appeals for the District of Columbia issued an opinion vacating and remanding CAIR to the U.S. EPA. A December 2008 court decision kept the requirements of CAIR in place temporarily but directed EPA to issue a new rule to implement Clean Air Act requirements concerning the transport of air pollution across state boundaries. On	EU 120-125 &137-139

SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS (CONTINUED)

	July 6, 2011, the U.S. EPA finalized the Cross-State Air Pollution Rule (CSAPR). On December 30, 2011, CSAPR was stayed prior to implementation. On April 29, 2014, the U.S. Supreme Court issued an opinion reversing an August 21, 2012 D.C. Circuit decision that had vacated CSAPR. Following the remand of the case to the D.C. Circuit, EPA requested that the court lift the CSAPR stay and toll the CSAPR compliance deadlines by three years. On October 23, 2014, the D.C. Circuit granted EPA's request. CSAPR implementation is now in place and replaces requirements under EPA's 2005 Clean Air Interstate Rule.	
401 KAR 51:240, Cross-State Air Pollution Rule (CSAPR) NO_x annual trading program	40 CFR 97, Subpart AAAAA, *CSAPR NO_x Annual Trading Program* Subparts AAAAA, BBBBB, CCCCC, and EEEEE collectively make up the requirements commonly referred to as the Cross-State Air Pollution Rule (CSAPR). As the requirements of CSAPR apply to stationary, fossil-fuel-fired boilers serving at any time, on or after January 1, 2005, a generator with nameplate capacity of more than 25MWe producing electricity for sale.	EU 120-125 &137-139
40 CFR 97, Subpart BBBBB	*CSAPR NO_x Ozone Season Trading Program* Subparts AAAAA, BBBBB, CCCCC, and EEEEE collectively make up the requirements commonly referred to as the Cross-State Air Pollution Rule (CSAPR). As the requirements of CSAPR apply to stationary, fossil-fuel-fired boilers serving at any time, on or after January 1, 2005, a generator with nameplate capacity of more than 25MWe producing electricity for sale.	EU 120-125 &137-139
401 KAR 51:260, Cross-State Air Pollution Rule (CSAPR) SO_2 group 1 trading program	40 CFR 97, Subpart CCCCC, *CSAPR SO_2 Trading Program* Subparts AAAAA, BBBBB, CCCCC, and EEEEE collectively make up the requirements commonly referred to as the Cross-State Air Pollution Rule (CSAPR). As the requirements of CSAPR apply to stationary, fossil-fuel-fired boilers serving at any time, on or after January 1, 2005, a generator with nameplate capacity of more than 25MWe producing electricity for sale.	EU 120-125 &137-139
401 KAR 51:250, Cross-State Air Pollution Rule (CSAPR) NO_x ozone season group 2 trading program	40 CFR 97, Subpart EEEEE, *CSAPR NO_x Ozone Season Group 2 Trading Program* Subparts AAAAA, BBBBB, CCCCC, and EEEEE collectively make up the requirements commonly referred to as the Cross-State Air Pollution Rule (CSAPR). As the requirements of CSAPR apply to stationary, fossil-fuel-fired boilers serving at any time, on or after January 1, 2005, a generator with nameplate capacity of more than 25MWe producing electricity for sale.	EU 120-125 &137-139
401 KAR 52:020	*Title V permits*. This facility requires a Title V permit due to its status as a major source, i.e. it has the potential to emit	Source-wide

SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS (CONTINUED)

	100 tons or more of a regulated air pollutant.	
401 KAR 52:060	*Acid rain permits, incorporating the Federal Acid Rain provisions as codified,* Applicable to affected sources and units as set forth under 40 CFR 72.6 and incorporates by reference 40 CFR 72 – 78.	EU 120-125 &137-139
401 KAR 59:010	*New process operations,* Applicable to all process operations, which is not subject to another emission standard with respect to particulates in 401 KAR Chapter 59, commenced on or after July 2, 1975.	EU 114, 133D, 135D &137-139
401 KAR 59:015	*New indirect heat exchangers,* Applicable to indirect heat exchangers having a heat input capacity of more than 1 MMBtu/hr commenced after August 17, 1971, and after April 9, 1972 for units with a capacity of more than 250 MMBtu/hr.	EU 107 – 110 & 141-143
401 KAR 60:005, Section 2(2)(d)	*40 CFR 60.40c to 60.48c (Subpart Dc), Standards of Performance for Small Industrial-Commercial-Institutional Boilers and Process Heaters,* Applicable to indirect heat exchangers greater than or equal to 10 MMBtu/hr but less than or equal to 100 MMBtu/hr that were constructed, modified, or reconstructed after June 19, 1984	EU 107 – 110 & 141-143
401 KAR 60:005, Section 2(2)(dddd)	*40 CFR 60.4200 to 60.4219, Tables 1 to 8 (Subpart IIII), Standards of Performance for Stationary Compression Ingition Internal Combustion Engines* Applicable to owners and operators of stationary compression ignition (CI) internal combustion engines (ICE) that commence construction after July 11, 2005, where the stationary CI ICE are: • Manufactured After April 1, 2006, and are not fire pump engines, or • Manufactured as a certified National Fire Protection Association fire pump engine after July 1, 2006. Applicable to owners and operators of any stationary CI ICE that are modified or reconstructed after July 11, 2005.	EU 104, & 115
401 KAR 60:005, Section 2(2)(eeee)	*40 CFR 60.4230 to 60.4248, Tables 1 to 4 (Subpart JJJJ), Standards of Performance for Stationary Spark Ignition Internal Combustion Engines,* Applicable to stationary spark ignition internal combustion engines which are considered emergency engines and are greater than 25 HP fueled by liquefied petroleum gas manufactured on or after January 1, 2009	EU 128
401 KAR 60:005, Section 2(2)(ffff)	*40 CFR 60.4300 to 60.4420, Table 1 (Subpart KKKK), Standards of Performance for Stationary Combustion Turbines;* Applicable to stationary combustion turbines	EU 120-125 &137-139

SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS (CONTINUED)

	with a heat input greater than 10 MMBtu/hr, which commenced construction, modification, or reconstruction after February 18, 2005.	
401 KAR 60:005, Section 2(2)(jjjj)	*40 CFR 60.5508 to 60.5580, Tables 1 to 3 (Subpart TTTT), Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units*, Applicable to any steam generating unit, IGCC, or stationary combustion turbine that commenced construction after January 8, 2014 or commenced reconstruction after June 18, 2014 that has a base load rating greater than 250 MMBtu/hr of fossil fuel (either alone or in combination with any other fuel) and serves a generator or generators capable of selling greater than 25 MW of electricity to a utility power distribution system	EU 120-125 &137-139
401 KAR 63:002, Section 2(4)(eeee)	*40 CFR 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (Subpart ZZZZ), National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines* Applicable to stationary RICE at a major or area source of HAP emissions, except if the stationary RICE is being tested at a stationary RICE test cell/stand. A stationary RICE is any internal combustion engine which uses reciprocating motion to convert heat energy into mechanical work and which is not mobile. Stationary RICE differ from mobile RICE in that a stationary RICE is not a non-road engine as defined at 40 CFR 1068.30, and is not used to propel a motor vehicle or a vehicle used solely for competition.	EU 102-104
401 KAR 63:010	*Fugitive Emissions*, Applicable to an apparatus, operation, or road which emits or may emit fugitive emissions provided that the fugitive emissions from such facility are not elsewhere subject to an opacity standard within the administrative regulations of the Division for Air Quality.	EU 36, 130, 133B, 133C, 134D, 134E, 135A, 135B, 135C, 136A, 136B, & 136C
40 CFR 75	*Continuous emissions monitoring*, apply to each affected unit subject to Acid Rain emission limitations or reduction requirements for SO_2 or NO_x	EU 120-125 &137-139

Table C - Summary of Precluded Regulations:

Regulation	Basis of Determination	Emission Unit
401 KAR 51:017, Section 8 to 16	*Prevention of Significant Deterioration*	

SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS (CONTINUED)

Table D - Summary of Non Applicable Regulations:

Non Applicable Regulations	Emission Unit
401 KAR 63:002, Section 2(4)(iiii), *40 CFR 63.7480 through 63.7575, Tables 1 through 13 (Subpart DDDDD), National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters, as published July 1, 2020*	EU 107, 108-110, & 141-143
401 KAR 63:002, Section 2(4)(jjjjj), *40 CFR 63.11193 through 63.11237, Tables 1 through 8 (Subpart JJJJJJ), National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources, as published July 1, 2020.*	EU 107, 108-110, & 141-143
401 KAR 60:005, Section 2(2)(dddd), *40 CFR 60.4200 to 60.4219, Tables 1 to 8 (Subpart IIII), Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*	EU 104

Air Toxic Analysis

401 KAR 63:020, *Potentially Hazardous Matter or Toxic Substances*
The Division for Air Quality (Division) has performed SCREEN View on January 20, 2021 of potentially hazardous matter or toxic substances (Formaldehyde & Toluene) that may be emitted by the facility based upon the process rates, material formulations, stack heights and other pertinent information provided by the applicant. Based upon this information, the Division has determined that the conditions outlined in this permit will assure compliance with the requirements of 401 KAR 63:020.

Single Source Determination
N/A

SECTION 5 – PERMITTING HISTORY

Permit	Permit type	Activity#	Complete Date	Issuance Date	Summary of Action	PSD/Syn Minor
V-04-024	Construction & Operating	APE20040002	2/7/97	8/18/06 Permit withdrawn 8/25/06	Title V Renewal Application Withdrawn due to EPA objections	
V-07-018	Construction & Operating	APE20070001	4/9/07	11/2/07	Resolved EPA objections by incorporating source-specific SIP with an SO_2 limit on PAF3 from 5.4 lb/MMBtu to 1.2 lb/MMBtu	PSD
V-07-018 R1	Minor Revision	APE20090002	4/29/09	12/16/09	Opacity Mitigation System to reduce fine particulate emissions while reducing SO_3	N/A
V-12-041	Renewal	APE20120002	4/30/12	8/30/13	Renewal	N/A
V-12-041 R1	Construction & Operating	APE20140002	3/12/14	4/20/15	Construction of 3-to-1 combined cycle combustion turbine system	Synthetic Minor Preclusion to PSD
V-12-041 R2	Construction & Operating	APE20160003 APE20160004 APE20160005 APE20170004 APE20170007 APE20170008 APE20170009 APE20180002	8/1/16 9/27/16 1/9/17 5/26/17 2/5/18 12/22/17 3/22/17 1/11/18	8/28/2018	Emergency engine Gypsum dewatering system Federally enforceable limit for SO_2 for 1-hr SO_2 NAAQS Dry landfill for CCR due to new federal regulatory requirements Removal of COMS in lieu of CEMS Correction to	Synthetic Minor Preclusion to PSD

					emergency engine regulatory applicability determination	
V-18-056	Renewal	APE20180004	8/8/2018	12/8/2019	Title V Renewal	N/A

SECTION 6 – PERMIT APPLICATION HISTORY

Permit Number: V-18-056 Activities: APE20180004

Received: February 27, 2018 Application Complete Date(s): September 1, 2006

Permit Action: ☐ Initial ☒ Renewal ☐ Significant Rev ☐ Minor Rev ☐ Administrative
Construction/Modification Requested? ☐Yes ☒No

Previous 502(b)(10) or Off-Permit Changes incorporated with this permit action ☒Yes ☐No

APE20180008 – 502(b)(10) was received on December 13, 2018, for the addition of a mobile coal washing station in order to process the long term coal storage and coal fines storage piles which have mixed with sediment over time.

Description of Action:

On February 27, 2018, Tennessee Valley Authority (TVA) submitted an application in order to continue operating its title V air permit at the Paradise Fossil (PAF) facility, which expired on August 30, 2018. As required by 401 KAR 52:020, Section 12(4) and (5), the permittee met its obligation by submitting a timely and complete renewal application at least six months prior to expiration of the current permit, therefore, the permittee shall continue to operate in compliance with the existing terms and conditions of V-12-041 R2, until the final permit of V-18-056 has been issued. During the renewal process it was determined that TVA changed the naming convention of the emission units based on comparing the 2012 TVA PAF Renewal Application to the 2018 TVA PAF Renewal Application. The emission units will retain their original designation however, the Division has provided the emission unit in the renewal and its designation in the permit and also the units that were removed between the significant revision of 2014 where coal-fired EGU's PAF1 and PAF2 were replaced with EU120-122, the 3-to-1 combined cycle combustion turbines in sequence with one steam turbine:

Description	2012 Renewal	2018 Renewal	DAQ's Designation
EGU 1	PAF1 / EU01	Removed	EU01/Removed
EGU 2	PAF2 / EU02	Removed	EU02/Removed
EGU 3	PAF3	EU03	EU03
Building Boilers 4&5	04-05	Removed	04-05/Removed
Building Boiler 6	EU06	Removed	EU06/Removed
Space Heaters 8 (2.5 MMBtu/hr)	07-12	Removed	07-12/Removed
Space Heaters 3 (2.5 MMBtu/hr)	13-15	Removed	13-15/Removed
Cooling Towers for EGU's 1, 2, and 3	16 - 18	5-7	16 – 18
Coal Hauling, Open Storage, Receiving Hoppers	19	8	19
Three Coal Breakers and Five Conditioners	EU20, 21, & 37	9, 10, and 20	EU20, 21, & 37
Coal Handling Transfer	EU22	11	EU22

Description	2012 Renewal	2018 Renewal	DAQ's Designation
Station A			
Coal Handling Transfer Station B	EU23	12	EU23
Coal Open Live Storage Silo #1 through #4	EU24 and 36	Removed	EU 24 & 36 / Removed
Coal Handling Transfer Station G	EU25	Two Process Removed / One (13) stay	EU25 (w/ two processes removed)
Coal Handling Transfer Station H	EU26	14	EU26
Coal Live Storage Silo #5	EU27a	Removed	EU27a/Removed
Coal Live Storage Silo #6	EU27b	Removed	EU27b/Removed
Coal Handling Transfer Station J	28	Removed	28/Removed
Coal Handling Transfer Station K	29	Removed	29/Removed
Coal Handling Transfer Station L	30	Removed	
Coal Handling Transfer Station M	EU31	Removed	
Coal Conveying and Bunker Room (EU32-34, 38)	EU32 EU33 EU34 EU38	15 16 17 21	EU32 (32-34, 38)
Long Term Coal Open Storage Pile	EU35	18	EU35
Long Term Coal Storage Yard, Coal Hauling, Open Storage, Reclaim Hopper	EU39 (includes EU40)	Removed	EU38/Removed
Limestone Railcar/ Truck Unloading System	EU41	Removed	EU41/Removed
Reclaim/Receiving Hopper Feeder Bagfilter	EU42	Removed	EU42/Removed
Limestone Prep Building Surge Hopper Bagfilters (DC-2A) Transfer Station	EU43	Removed	EU43/Removed
Limestone Prep Building Surge Hopper Bagfilters (DC-2B) Transfer Station	EU44	Removed	EU44/Removed
Limestone Prep	EU45	Removed	EU45/Removed

Description	2012 Renewal	2018 Renewal	DAQ's Designation
Building Surge Hopper Bagfilters (DC-3)			
Limestone Prep Building Surge Hopper Bagfilters (DC-4A)	EU46	Removed	EU46/Removed
Limestone Prep Building Surge Hopper Bagfilters (DC-4B)	EU47	Removed	Removed
Limestone Prep Building Surge Hopper Bagfilters (DC-4C)	EU48	Removed	Removed
Limestone Prep Building Surge Hopper Bagfilters (DC-5A)	EU49	Removed	Removed
Limestone Prep Building Surge Hopper Bagfilters (DC-5B)	EU50	Removed	Removed
Limestone Prep Building Surge Hopper Bagfilters (DC-5C)	EU51	Removed	Removed
Limestone Handling Bulk Storage	EU52	Removed	Removed
Ash Handling	EU55 (includes EU56 and EU57)	38 (including 39 & 40)	EU55
Gypsum Handling (Rim Ditch disposal began 1994)	EU58	41	EU58
Transfer to New Conditioner Building Surge Bin and Crushers	EU71	22	EU71
(2) Crushers (new Conditioner Building) Pennsylvania Model SCCA 227 (continued)	EU72	23	EU72
Unit 3 Limestone Rail/Truck	EU73	30	EU73
Reclaim/Receiving Hopper	EU74	31	EU74
4000 ton Limestone storage silo	EU75	32A-32H	EU75
Limestone Prep Building	EU76	33	EU76
Existing Limestone Bulk Storage Pile (increment for Unit 3)	EU77	34	EU77
Coal Fines Pond Activities and Coal	EU79	24	EU79

Description	2012 Renewal	2018 Renewal	DAQ's Designation
Fines Hauling			
Coal Fines Storage Yard	EU80	25	EU80
Reclaim of Coal Fines	EU81	26	EU81
Coal Fines Reclaim Hopper; 200 TPH	EU82	27	EU82
Unit 3 Coal Fines Screw Conveyor 200 tons/hr	EU83	28	EU83
Coal Fines Belt Conveyor; Feed Belt to BC-45	EU84	29	EU84
Transportation of Hydrated Lime over Haul Road	85A-J	47A-47E, 85F-85J were removed	85A-85E
Hydrated Lime Truck Unloading to Storage Silos #1-4 for Unit 3	86-89	48-51	86-89
Feed Hopper Loading Silos #1-#4 for Unit 3	90-93	52-55	90-93
Transfer from Truck to Silo #1 – (2) For Units 1 & 2	94-95	Removed	94-95/Removed
Lime Feed Hopper Loading Silos #1-2 for Units 1 & 2	96-97	Removed	96-97/Removed
Emergency Diesel Engine Fire Pump 1 @ Intake Structure, Cummins Model NT855F3	101	56	101
Emergency Diesel Engine Fire Pump 2, Cummins Model QSB6.7	102	57	102
Cummins Generac Model DGCA-5742774; Two-Way Radio System Emergency Diesel Engine	103	58	103
Auxiliary Boiler for Steam Turbine; 80 MMBtu/hr; Natural Gas	107 – APE20140002	107	107
Dew-Point Gas Heater for the CTs; Natural Gas-Fired Gas Heater	108 – APE20140002	108	108

Description	2012 Renewal	2018 Renewal	DAQ's Designation
#1; 13.5 MMBtu/hr; Natural Gas			
Dew-Point Gas Heater for the CTs; Natural gas-Fired Gas Heater #2; 13.5 MMBtu/hr	109 – APE20140002	109	109
Dew-Point Gas Heater for the CTs; Natural Gas-Fired Gas Heater #3; 13.5 MMBtu/hr	110 – APE20140002	110	110
450 MMBtu/hr Babcock & Wilcox FM 220-97, Duel-Fueled Boiler, Identical to 112 & 113	111 – APE20140002	2	111
450 MMBtu/hr, Babcock & Wilcox FM 220-97, Duel-Fueled Boiler, Identical to 111 & 113	112 – APE20140002	3	112
450 MMBtu/hr. Babcock & Wilcox FM 220-97, Duel-Fueled Boiler, Identical to 111 & 112	113 – APE20140002	4	113
16 Cell Mechanical-Draft Cooling Towers	114 – APE20140002	111	114
Combustion Turbine 3 (Combined Cycle Mode); GE 7FA.05; 2,300 MMBtu/hr (235 MW), 400 MMBtu/hr w/ Duct Burner (2,700 MMBtu/hr, total) each w/ one 470 MW steam turbine connected to the three CTs	120 – APE20140002	101	120
Combustion Turbine 3 (Combined Cycle Mode); GE 7FA.05; 2,300 MMBtu/hr (235 MW), 400 MMBtu/hr w/ Duct Burner (2,700 MMBtu/hr, total) each w/ one 470 MW steam turbine connected to the three CTs	121 – APE20140002	102	121

Description	2012 Renewal	2018 Renewal	DAQ's Designation
Combustion Turbine 3 (Combined Cycle Mode); GE 7FA.05; 2,300 MMBtu/hr (235 MW), 400 MMBtu/hr w/ Duct Burner (2,700 MMBtu/hr, total) each w/ one 470 MW steam turbine connected to the three CTs	122 – APE20140002	103	122
Combustion Turbine 1 (Simple Cycle Mode); GE 7FA.05, 2300 MMBtu/hr (235 MW)	123 – APE20140002	104	123
Combustion Turbine 2 (Simple Cycle Mode); GE 7FA.05, 2300 MMBtu/hr (235 MW)	124 - APE20140002	105	124
Combustion Turbine 3 (Simple Cycle Mode); GE 7FA.05, 2300 MMBtu/hr (235 MW)	125 - APE20140002	106	125
Generac Generator, Model RG025, Propane Fired	EU128 – APE20160003	59	EU128
Dewatered Gypsum Process	EU129 – APE20160004	44	EU129
Dewatered Gypsum Transportation (haul-road – unpaved)	EU130 – APE20160004	45	EU130
Bin Vent Filter for Fly Ash Storage Silo A	131 – APE20170007	35	131
Bin Vent Filter for Fly Ash Storage Silo B	132 – APE20170007	36	132
Fly Ash Hauling to Landfill	133 – APE20170007	133A-D	133A-D
Dewatered Gypsum Handling	134 – APE2017007	134A-F	134A-F
Gypsum Hauling Offsite or to Landfill	135 – APE20170007	135A-D	135A-D
Fly Ash & Gypsum Landfill Operations	136 – APE20170007	136A-C	136A-C

Permit Number: V-18-056 Activities: APE20190002

Received: February 11, 2019 Application Complete Date(s): N/A, determined Significant

Permit Action: ☐ Initial ☐ Renewal ☐ Significant Rev ☒ Minor Rev ☐ Administrative
Construction/Modification Requested? ☒Yes ☐No

APE20190002 – On February 11, 2019, the Division received an application for the modification to the fuel for PAF3. TVA proposed to deconstruct coal fine piles which have set dormant for several years, accumulating debris, thus it is necessary to wash these coal fine piles in order to remove the dirt. Based on the project's PTE, emissions for PM_{10} exceed the SER. Based on the increase in PTE, the Division requested TVA submit an application for a significant revision.

Permit Number: V-18-056 Activities: APE20190003

Received: March 5, 2019 Application Complete Date(s): March 13, 2019

Permit Action: ☐ Initial ☐ Renewal ☒ Significant Rev ☐ Minor Rev ☐ Administrative
Construction/Modification Requested? ☒Yes ☐No

APE20190003 – On March 5, 2019, at the request of the Division due to issues with APE20190002, where TVA submitted an application for significant permit revision for the modification to the fuel source February 11, 2019.

Table 1. Emissions Change from Unit 3 Fuel Modification	PM	PM_{10}	$PM_{2.5}$	SO_2
Baseline Annual Emissions (tons)	357	243	129	3,835
Projected Actual Emission Rate (lbs/MMBtu):				
Coal	0.021	0.014	0.008	0.110
Washed Fines	0.052	0.035	0.019	0.127
Blend Coal & Washed Fines (25% by weight) (tons)	552	355	188	2,812
Emission Change from Project (tons)	165	112	60	-1,022

Emission from the project exceed the SER for PM, PM_{10}, and $PM_{2.5}$, as defined in 401 KAR 51:001, Section (1)(218)(a). However, once the contemporaneous increases and decreases are included, the net change in emissions are significantly less than then they were prior to retiring PAF 1 and 2.

Table 2. Netting Analysis	PM	PM_{10}	$PM_{2.5}$
Increase due to requested permit change	165	112	60
Decrease from retiring PAF Units 1 & 2	-2,195	-1,492	-790
Increase from addition of combined-cycle plant	198	198	198
Increase from new dry fly ash gypsum dewatering facilities	35	14	5
Decrease from retiring old gypsum disposal	-12	-6	-5
Net change in emissions	-1,808	-1,174	-532

APPENDIX A – ABBREVIATIONS AND ACRONYMS

BACT – Best Available Control Technology, see 401 KAR 51:001, Section (1)(25)
Btu – British thermal unit
CAM – Compliance Assurance Monitoring
CO – Carbon Monoxide
CT – Combustion Turbine
Division – Kentucky Division for Air Quality
EF – Emission Factor
EGU – Electric Generating Unit
ESP – Electrostatic Precipitator
FGD – Flu Gas Desulfurization
GHG – Greenhouse Gas
HAP – Hazardous Air Pollutant
HCl – Hydrogen Chloride (Gaseous)
HF – Hydrogen Fluoride (Gaseous)
HHV – Higher Heating Value
J – Joule
lbs – pounds
MSDS – Material Safety Data Sheets
MW – Mega Watts
mmHg – Millimeter of mercury column height
MMBtu – Million British thermal units
MMscf – Million standard cubic feet
MWh – Mega-Watt hour
NAAQS – National Ambient Air Quality Standards
NESHAP – National Emissions Standards for Hazardous Air Pollutants
ng – nanogram
NG – Natural Gas
NO_x – Nitrogen Oxides
NSR – New Source Review
PAF – Paradise Fossil Plant
PM or PT – Particulate Matter
PM_{10} – Particulate Matter equal to or smaller than 10 micrometers
$PM_{2.5}$ – Particulate Matter equal to or smaller than 2.5 micrometers
ppm – parts per million
PSD – Prevention of Significant Deterioration, see 401 KAR 51:001, Section 1(197)
PTE – Potential to Emit, see 401 KAR 51:001, Section (1)(190)
SCR – Selective Catalytic Reduction System
SD – Shutdown
SER – Significant Emission Rate, see 401 KAR 51:001, Section (1)(218)(a)
SO_2 – Sulfur Dioxide
SO_3 – Sulfur Trioxide
SU – Startup
TF – Total Fluoride (Particulate & Gaseous)
tpy – ton per year
TVA – Tennessee Valley Authority
VOC – Volatile Organic Compounds

APPENDIX B – INDIRECT HEAT EXCHANGER HISTORY

EU	Fuel(s)	Capacity (MMBtu/hr)	Construction Date	Date Removed	Total Heat Input Capacity for PM (MMBtu/hr)	PM Limit (lb / MMBtu)	Total Heat Input Capacity for SO_2 (MMBtu/hr)	SO_2 Limit (lb / MMBtu)
1	Coal	6,959	1963	2017	13,969.6	0.11	N/A[1]	N/A[1]
2	Coal	6,959	1963	2017	13,969.6	0.11	N/A[1]	N/A[1]
3	Coal	11,457	1970	2020	25,467.4	0.11	N/A[2]	N/A[2]
4	#2 Fuel Oil	25.8	1963	2018	13,969.6	0.11	13,969.6	2.1
5	#2 Fuel Oil	25.8	1963	2018	13,969.6	0.11	13,969.6	2.1
6	#2 Fuel Oil	25.8	1970	2018	25,467.4	0.11	25,467.4	2.1
7	#2 Fuel Oil	2.5	1970	2018	25,467.4	0.10	25,467.4	0.8
8	#2 Fuel Oil	2.5	1970	2018	25,467.4	0.10	25,467.4	0.8

EU	Fuel(s)	Capacity (MMBtu/hr)	Construction Date	Date Removed	Total Heat Input Capacity for PM (MMBtu/hr)	PM Limit (lb / MMBtu)	Total Heat Input Capacity for SO_2 (MMBtu/hr)	SO_2 Limit (lb / MMBtu)
9	#2 Fuel Oil	2.5	1970	2018	25,467.4	0.10	25,467.4	0.8
10	#2 Fuel Oil	2.5	1970	2018	25,467.4	0.10	25,467.4	0.8
11	#2 Fuel Oil	2.5	1970	2018	25,467.4	0.10	25,467.4	0.8
12	#2 Fuel Oil	2.5	1970	2018	25,467.4	0.10	25,467.4	0.8
13	#2 Fuel Oil	2.5	1981	2018	25,474.9	0.10	25,474.9	0.8
14	#2 Fuel Oil	2.5	1981	2018	25,474.9	0.10	25,474.9	0.8
15	#2 Fuel Oil	2.5	1981	2018	25,474.9	0.10	25,474.9	0.8
107	Natural Gas	80	2015	N/A	25,554.9	0.10	25,554.9	0.8
108	Natural Gas	13.5	2015	N/A	25,595.4	0.10	25,595.4	0.8
109	Natural Gas	13.5	2015	N/A	25,595.4	0.10	25,595.4	0.8

EU	Fuel(s)	Capacity (MMBtu/hr)	Construction Date	Date Removed	Total Heat Input Capacity for PM (MMBtu/hr)	PM Limit (lb / MMBtu)	Total Heat Input Capacity for SO_2 (MMBtu/hr)	SO_2 Limit (lb / MMBtu)
110	Natural Gas	13.5	2015	N/A	25,595.4	0.10	25,595.4	0.8
111	Natural Gas & #2 Fuel Oil	450	2015	2020	26,945.4	0.10	26,945.4	N/A[3]
112	Natural Gas & #2 Fuel Oil	450	2015	2020	26,945.4	0.10	26,945.4	N/A[3]
113	Natural Gas & #2 Fuel Oil	450	2015	2020	26,945.4	0.10	26,945.4	N/A[3]
141	Natural Gas	10	Proposed 2023	N/A	150.5	0.30	150.5	0.99
142	Natural Gas	10	Proposed 2023	N/A	150.5	0.30	150.5	0.99
143	Natural Gas	10	Proposed 2023	N/A	150.5	0.30	150.5	0.99

[1] SO_2 emissions shall not exceed 1.2 lbs/MMBtu based on a 24-hour average. [40 CFR 52.939(c)(49) *A Revision to the KY SIP for TVA Paradise Steam Plant*]
[2] SO_2 emissions shall not exceed 1.2 lbs/MMBtu when the scrubber is operating and 3.1 lbs/MMBtu when the scrubber is bypassed based on a 24-hr avg. [40 CFR 52.939(c)(49)]
[3] These units are exempt from the SO_2 emission limits by firing only gaseous fuel. [40 CFR 60.42b(k)(2)]